APPENDIX V

THE FISCAL EFFECTS OF PROPOSED TRANSPORTATION OF SPENT NUCLEAR FUEL ON NEVADA STATE AGENCIES

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By

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THE FISCAL EFFECTS OF PROPOSED TRANSPORTATION OF SPENT NUCLEAR FUEL ON NEVADA STATE AGENCIES

- Department of Transportation
- Nevada Highway Patrol
- Division of Emergency Management
- Public Service Commission

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1. INTRODUCTION

1.1 PROPOSED LEGISLATION AND ITS FISCAL EFFECTS IN NEVADA

With the enactment of the Nuclear Waste Policy Amendments Act of 1987, Yucca Mountain, Nevada was selected as the only site to be studied for deep geologic storage of spent nuclear fuel and high level nuclear waste in the United States. Under this act and during the site characterization that has followed the act's passage, it has been generally acknowledged that the studies and licensing activities necessary to begin repository construction and emplacement of waste would not be completed until 2010 or later.

Recent proposed legislation in the 105th Congress, Senate Bill 104 and its companion H.R. 1270, if enacted over a promised Presidential veto, would require the shipment of spent nuclear fuel from commercial reactor sites to Nevada for interim storage, beginning in the year 2002. In preparation for this accelerated schedule for nuclear waste shipments, it is critical to consider its many operational, infrastructure, and fiscal effects on the State of Nevada. This report outlines the fiscal effects on selected Nevada state agencies, based on one scenario (the "base case," discussed in sections 2 and 3) for the shipment campaign across the country and into Nevada.

1.2 FISCAL IMPACT ANALYSIS: NEVADA STATE AGENCIES

The calculation of fiscal impacts has been among the priorities of the State of Nevada's analysis of effects of nuclear waste repository development. This report is the latest in a series of analyses of effects on State agencies, beginning in 1987. The methods used to collect and compile the information for this study are similar to those used for prior studies. Interviews were scheduled with individuals knowledgeable about agency missions and operations. In most cases, the individuals interviewed had prior experience with impact analysis in general and fiscal analysis of repository effects in particular. Each interview began with a description of the transportation and interim storage scenario described in sections 2 and 3. Then, interviewees were asked questions about the specific responses of their agencies to the scenario, with specific reference to agency activities, staffing required to perform those activities, equipment and facility needs associated with the activities or the staff functions, and the costs of each cost "object," such as personnel, equipment, infrastructure improvement or other capital acquisition. In the course of the interviews, documents were compiled to supplement or verify the information collected in the interview.

After all interviews were completed, the information collected in the interviews and the accompanying documentary evidence were assembled and summarized into the findings described in section 4. The cost information obtained from the interviews and documents obtained from agencies were compiled into cost factors, which are included in section 4 and summarized in section 5. The factors included in this draft report will be reviewed by the agency sources, revised as necessary and included in a final report.

1.3 NOTEWORTHY FEATURES OF THIS FISCAL ASSESSMENT

Although this study is similar to many prior efforts, it differs from prior analyses due to the imminence of the action proposed by the Congress. While the State has recognized for a decade the Congress's intention to characterize and site the nuclear waste repository in Nevada, the most recent legislative initiatives would substantially accelerate the shipment program, and attempt to resolve by legislative dictate some of the uncertainty surrounding the national waste management program. This presents state agency representatives with a set of concrete issues that must be addressed in short order if the health, safety and welfare of the citizens of the State are to be protected.

The study presents the needs of four Nevada agencies to meet their basic missions in response to federally-mandated actions. It does not attempt to predict which of the needs described in the report will actually be met, and which will remain as shortfalls or deficiencies. Also, no attempt is made here to determine who will pay for the actions that will be taken to meet the public needs.

Some of the needs described in this report may arise whether nuclear waste is shipped to Nevada or not. However, all needs related to shipments of nuclear waste to an interim storage facility are required either sooner or in greater magnitude than would be required without the shipments. As such, they are directly caused by the transportation resulting from interim storage initiatives under current consideration.

What You Should Know About This Assessment

The cost to four Nevada state agencies of the first three years of the shipment campaign implied by proposed legislations estimated at $489 million. This estimate is based on several key assumptions, and substantial input form officials in the affected agencies. For convenience, key features and assumptions of the assessment are listed, along with references to the text:

- The assessment addresses state agency needs which would be required sooner or in greater magnitude due to federally-mandated shipment of spent nuclear fuel under proposed legislation (pg. 2).
- The assessment does not identify who will pay for fiscal impacts. Some impacts could occur as shortfalls or deficiencies, rather than as fiscal obligations (pp. 2, 34).
- The estimated number of shipments, shipment mode and approach to Nevada are based on the "current capabilities scenario with default routing" from a September 1996 analysis by Nevada Nuclear Waste Project Office (pg. 4).
- Truck shipments projected for years 1-3 are assumed to use currently-certified truck transport casks, each containing one assembly from a pressurized water reactor or two assemblies from a boiling water reactor (pg. 4).

- The routing of legal-weight truck shipments in Nevada would meet the provisions of DOT regulations (HM 164). That is, absent state designation of alternative routes, truck shipments would use interstate highways through the Las Vegas Valley (pp. 4,6).

- The Spaghetti Bowl upgrade will be completed as currently planned, with costs not attributed to nuclear waste transportation or proposed federal legislation (pg. 8).

- The current configuration of the Spaghetti Bowl will not accommodate return shipments of rail casks on heavy-haul trucks. Therefore, the assessment assumes that the development of the northern bypass of the Spaghetti Bowl would be accelerated and used for legal-weight truck and heavy-haul shipments of nuclear waste (pg. 8).

- The assessment assumes that all highway infrastructure improvements would be planned and implemented on an accelerated schedule, due to the federal-mandate for early shipments in proposed legislation (pg. 23).

- The assessment includes ports of entry (constructed by NDOT, operated by NHP) at locations where legal-weight truck shipments enter Nevada. A port of entry for rail shipments has been discussed but is not included in this assessment (pp. 24,25).

- The assessment includes escorts (fore and aft) for legal-weight truck and heavy-haul shipments (pg. 27).

- Safe parking areas, not currently required by state law, are not included in this assessment (pg. 30).

- The cost of providing emergency communications along shipment routes are included. However, the assessment takes no position on whether the methods proposed by NDOT or NHP should be preferred (pp. 28,29).

- The NDOT communications system is in place in Clark County and is available for use with adequate capacity. Therefore, additional communications costs are primarily for coverage in rural areas.

- Rail inspection (one additional inspector) is included in this assessment (pg. 32).

- The costs associated with meeting the recommendations (to USDOT) of the Alliance for Uniform Hazardous Transportation Procedures are not included in this assessment (pg. 32).

- This assessment does not include estimates of additional costs to the Nevada Department of Health, which has radiological regulation responsibilities, or the Division of Forestry, which has certain first responder and fire suppression responsibilities (pg. 22).

- This assessment includes the cost of training and equipment provided by state agencies to local jurisdictions, but does not estimate other fiscal impacts for local government (pg. 22).

2. THE BASE CASE SCENARIO

2.1 THE BASE CASE SCENARIO FOR TRANSPORTATION OF SNF/HLW

Under the base case scenario, containers of nuclear waste would be shipped to Nevada from about 80 reactor and defense sites throughout the country. Each waste site would ship by either legal weight truck or by rail, entering Nevada from the east or the south by highway and/or rail routes. The routes described in this report are based on current circumstances and policy: highway shipments (including heavy haul shipments of rail casks) would conform to the provisions of HM 164, requiring the use of interstate highways absent state designation of alternative routes; rail shipments would use class A railroads—minimizing time distance while favoring rail lines owned by the original carrier.

2.2 THE NUMBER OF EARLY SHIPMENTS AND THEIR APPROACH TO NEVADA

Table 1 shows the number of shipments into the state that would be expected in the first five years of shipments, based on a recent analysis by the State of Nevada of nuclear waste transportation (PIC, 1996). The table shows that, in the first year of shipments under S. 104, the state would receive over 2,600 truck shipments (an average of over 50 per week) and 64 rail shipments (an average of 1.2 shipments per week).* The table also shows that shipments by rail will increase over the period, and that shipments by truck will decrease.

The trend indicated by the table reflects the concentration of shipments of older fuel from sites having limited transportation infrastructure in the earlier years, and shipments from sites having more extensive transportation infrastructure increasing over time. The implication of this trend is that the total number of shipments—primarily by legal weight truck—will peak in the first year, and that shipments by rail and heavy haul truck will become more prevalent (in terms of the number of assemblies transported) in the later years.

* Truck shipments in the initial shipment years are assumed to use currently-licensed 27-ton casks, containing one spent fuel assembly from a pressurized water nuclear reactor, or two assemblies from a boiling water reactor. Shipments in these casks can meet legal highway-weight limits of 80,000 pounds.

Table 1. Base Case Shipment Scenario

Shipments	*Year 1*	*Year 2*	*Years 3-5*
From the East:			
Rail and Heavy Haul Truck:			
Large Cask (125-ton)	11	7	56
Small Cask (75-ton)	51	97	309
Truck	2,518	1,873	3,805
From the South:			
Rail and Heavy Haul Truck:			
Large Cask (125-ton)	2	2	5
Small Cask (75-ton)	-	-	23
Truck	87	109	-
Total Shipments:			
Rail/Heavy-Haul	64	106	393
Average per Week	*1.2*	*2.0*	*2.5*
Truck	2,607	1,984	3,805
Average per Week	*50.1*	*38.2*	*24.4*

3. THE SHIPMENT ROUTES IN NEVADA

3.1 LEGAL WEIGHT TRUCK SHIPMENTS

Routes for Shipments from the East

As shown in Figure 1, legal-weight truck shipments from the east (under the base case scenario) would enter Nevada on I-15 from Arizona near Mesquite, and travel southwest on I-15 to US 95 —accessing US 95 either at the new "Spaghetti Bowl" interchange or via a newly constructed bypass through the cities of Las Vegas and North Las Vegas (this alternative is discussed in section 4). If shipments use the Spaghetti Bowl interchange, trucks would travel west along US 95, turning north and then northwest through the rapidly-developing northwestern urban area of the Las Vegas Valley. If they use the proposed bypass, trucks would travel west on the bypass (approximately at Elkhorn Avenue in the cities of Las Vegas and North Las Vegas) to the intersection with US 95 northbound in northwest Las Vegas. Under either routing alternative, trucks would then travel northwest through Indian Springs and past the Mercury exit to the 2-lane portion of US 95 for the balance of the trip through Nye County. At the Lathrop Wells area of Amargosa Valley, trucks would turn right onto the access road to Area 25 of the Nevada Test Site, just past the junction of US 95 and NV 373.

Routes for Shipments from the South

Legal weight truck shipments from the south would enter Nevada on I-15 at Primm, traveling north to the Spaghetti Bowl, exiting to US 95 northbound along the same route as for shipments from the east. Return trips of legal weight trucks would reverse these routes, carrying empty casks to the next reactor site to load.

Ports of Entry for Legal-Weight Truck Shipments

Ports of entry would be required at each highway entrance to the state, near Mesquite and near Primm, to ensure each shipment's compliance with state law. Also, escorts would be required fore and aft to accompany shipments from each port of entry to the interim storage site. NDOT would be responsible for design and construction of the ports of entry, while Nevada Highway Patrol would be responsible for staffing and maintaining the ports of entry, and for managing the escort process on behalf of the State.

3.2 RAIL/HEAVY HAUL SHIPMENTS

Approaching Caliente from the East and South

Shipments by rail and heavy haul truck would involve considerably more complexity than shipments by legal weight trucks. As shown in Figure 2, shipments from both directions would be by the Union Pacific Railroad to Caliente: from the east, trains would travel from the Utah state line through Crestline to Caliente (about 39 miles); from the south, trains would travel from the California state line

via Jean through Las Vegas to Caliente (about 167 miles). According to state agency representatives, development of ports of entry for rail shipments into the State is under discussion, but no cost estimates for this action are included in this report.

Intermodal Transfer and Heavy Haul for Early Rail Shipments

At Caliente, all shipments would be offloaded at the transfer facility described in proposed legislation, and loaded onto heavy haul trucks—with inspections by state and federal inspectors to ensure compliance with state and federal law and operating regulations. Although the specific design and configuration of the trucks that will carry either 75-ton or 125-ton (or some alternative design) casks to an interim storage facility cannot be described until a shipping campaign has been developed by USDOE and its contractors, past studies suggest some of the requirements for heavy haul of nuclear waste. Figures 3a-3d show two possible truck designs and associated turning radii that have been developed by a Las Vegas shipper. It is estimated that a heavy haul vehicle loaded with a large waste cask (125 tons) would weigh as much as 500,000 pounds, and that the vehicle would be about 14 feet wide and over 200 feet long.

Restrictions on Heavy-Haul Shipment and State Permitting

To allow a load of this size and weight on public highways requires certain operating considerations. First, there are certain highways that cannot accommodate this load at all. In other cases, highway segments have "frost restrictions" that prohibit overweight loads during the spring thaw (generally February 1 through April 30 each year) to avoid roadway damage. (Figure 4 shows the roads subject to these restrictions in 1996.) Finally, all overweight and over-dimension truck loads must obtain a state permit to travel on any highways within the state.

In Nevada, there are three categories of truck permitting: (1) legal weight trucks that weigh less than 80,000 pounds, and are less than 70 feet long; (2) over-dimension trucks that weigh more than 80,000 pounds and are between 70 and 105 feet long; and (3) "nonreducible load" trucks that are over 105 feet long. Clearly, heavy haul trucks carrying nuclear waste would fit in the last category. Permits for this category of truck require consideration of all operating conditions likely to be encountered along the route, and require an escort to protect both the over-dimension truck and the general public during the shipment. For nuclear waste shipments, escort vehicles will be required fore and aft of the truck and, as described below, at least one Nevada Highway Patrol escort will be required for in-route traffic control.

Potential Routes for Heavy Haul from Caliente

Figures 5 and 6 show the location of the proposed transfer facility in Caliente, as originally proposed in S.104. Out of Caliente, there are two primary routes for heavy haul travel to Area 25 of the Nevada Test Site:

Around the Nellis Air Force Range: The first potential route would travel west along US 93 to Crystal Springs, then along Nevada 375 to Warm Springs in Nye County, then on US 6 to Tonopah, then south on US 95 through Goldfield and Beatty to the entrance to Area 25 near Amargosa Valley. This route would avoid major population centers, but would encounter other features that would make it problematic. The route includes ten summits or passes, requiring

significant delays or infrastructure improvements to avoid travel delays. Also, NV 375 between Crystal Springs and Warm Springs, as well as US 6 from Warm Springs to near Tonopah, and US 95 from Tonopah through Esmeralda County (see segments numbered 1, 5 and 23 on Figure 4) currently are subject to frost restrictions, and would either be unavailable for transport during the restricted period, or would require significant pavement upgrades to allow overweight travel. In Tonopah, Goldfield and Beatty, there are also geometric constraints to heavy haul truck shipments, with sharp turns in each of these towns probably requiring the construction of bypasses to avoid significant travel delays and safety hazards.

Through the Las Vegas Valley: The second potential route would travel west along US 93 to Crystal Springs, then would continue on US 93 south through Ash Springs, Alamo, and the Pahranagat National Wildlife Refuge, out of Lincoln County into Clark County, and finally intersecting with I-15 northeast of the Apex industrial complex. From there, the route would proceed southwest on I-15 into the Las Vegas Valley, to the "Spaghetti Bowl" intersection with US 95. The route would require trucks to exit I-15 to US 95 northbound, then travel northwest out of the Las Vegas Valley, through Indian Springs out of Clark County into Nye County, reaching the access road to Area 25 just past the intersection of US 95 and Nevada 373 at the Lathrop Wells area of Amargosa Valley. While this route includes significant population centers, it avoids travel over eight of ten passes, and avoids the infrastructure and geometric constraints of the first route.* Also, it complies with the requirements of HM 164, which require that truck shipments of hazardous materials use the national interstate highway system to the extent possible.

Heavy-Haul Route Assumption for this Assessment

Because the second alternative is the only route currently authorized under HM 164, and because the first alternative includes significant infrastructure, safety and geometric constraints, the second alternative was selected for the analysis contained in this report. The general effect of selecting the second alternative for analysis is to reduce the infrastructure cost projections required for state agencies to accommodate the nuclear waste shipment program. It is possible that *both* routes might be required to permit the schedule of shipments mandated in S.104, with loaded shipments using the second route and empty return shipments using the first route, at least in months not covered by frost restrictions. However, the analysis in this report is based on State of Nevada agency requirements associated only with the second route alternative (including the northern bypass option).

Particulars of the Heavy-Haul Route

A more detailed understanding of the selected route suggests specific agency actions required by the proposed nuclear waste shipment campaign:

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* The construction of a bypass in the northern Las Vegas Valley, as described in Section 4, below, would avoid some population areas and some geometric constraints associated with the Spaghetti Bowl. This option has been described by NDOT as its preferred, if not required, alternative, and is used as the basis for estimating infrastructure costs. The "Spaghetti Bowl route" described in this section includes highways that either exist or are under construction.

- Out of Caliente, trucks would travel up Newman Canyon, where the highway climbs from an altitude of 4,300 feet at Caliente to 6,200 feet at Oak Springs Summit, then descends to the Delamar and Pahroc Valleys, then climbs to Pahroc Summit Pass, and finally to Crystal Springs.

- At the Crystal Springs intersection with Nevada Highway 375, loaded trucks would bear left, heading south through the towns of Ash Springs and Alamo, into the Pahranagat National Wildlife Refuge. In this section of the route, the highway generally travels downhill over the 84 miles from Crystal Springs to the intersection with I-15.

- After entering I-15 via a right turn from US 93, trucks would continue generally downhill past Apex, into the Las Vegas Valley and the Spaghetti Bowl to the exit onto US 95 northbound. Trucks would have to exit I-15 by a right turn onto the US 95 entrance ramp, then merge into the rightmost of three travel lanes heading west (and later northwest) on US 95.

- For the next 55 miles, heavy haul trucks would travel on the limited access highway, first northwest out of the Las Vegas urban area, then west through Indian Springs toward the Mercury exit.

- After the Mercury exit, US 95 becomes a two-lane highway, which it remains into and through the Lathrop Wells intersection with Nevada 373 in Amargosa Valley.

- Just past this intersection, trucks would turn right onto an access road into Area 25 of the Nevada Test Site, to unload the rail casks at the interim storage facility at a location to be determined pursuant to S.104.

Infrastructure Problems Along the Heavy-Haul Route

The problematic portions of the heavy-haul route include:

The Ascent From Caliente: In the ascent out of Caliente, trucks weighing as much as a half million pounds would climb very slowly on the two-lane highway, causing substantial delays for following traffic which could not pass safely due to the length of the convoy consisting of the heavy haul truck and the accompanying escort cars. According to the Nevada Department of Transportation, there are 44 portions of US 93 between Caliente and Crystal Springs where the grade is greater than four percent, most of which are in the stretch between Caliente and Pahroc Summit. According to NDOT representatives, it would be critical to build climbing lanes in this segment of the route to permit traffic to pass the heavy haul vehicles carrying nuclear waste and the accompanying escort vehicles. (It should be noted that these infrastructure improvements would be required under either the first or second routing alternative out of Caliente.) It is expected that a typical 125-ton shipment would travel the 42 miles of this route segment at an average speed of 10-15 miles per hour, requiring a total of at least 3 hours.

Turnouts Along US 93: US 93 is a two-lane highway for the entire 84-mile distance from Crystal Springs to I-15. Although the grade on this stretch of highway would not require passing lanes, NDOT representatives indicate that turnouts would be required at least every 25 miles to allow following traffic to pass the heavy haul convoys, and to allow the convoy to stop for

exigencies. Also, a six-foot shoulder would be required along the two-lane highway (generally 22 feet-wide) to allow oncoming traffic to safely pass the heavy-haul truck, which may be up to 18 feet wide. It is expected that the 125-ton shipments over this stretch would travel at an average speed of 20-30 miles per hour (including four stops at turnouts), requiring about 3-4 hours to complete.

The US 93/I-15 intersection: The intersection between US 93 and I-15 as currently configured provides an insufficient turning radius for heavy haul trucks more than 200 feet long entering or leaving the expressway for the loaded and unloaded (return) trips, respectively. Figure 7 shows an aerial photograph of this interchange, with the entrance from southbound US 93 onto southbound I-15 indicated as item 1 (for the loaded trip), and the exit from northbound I-15 to northbound US 93 indicated as item 2 (for the return trip) on the photo. To accommodate heavy haul and over-dimensioned trucks in this interchange, NDOT has indicated that new ramps would have to be built to increase the turning radius for both directions. It is expected that travel from this intersection to the Spaghetti Bowl interchange would be at an average speed of 35 miles per hour, requiring about 45 minutes to complete.

Return Trips Through the Spaghetti Bowl: Figure 8 shows a scale model of the Spaghetti Bowl interchange between I-15 and US 95 in Las Vegas, as it will look when current improvements are completed. In infrastructure terms, the interchange would accommodate the weight of heavy haul shipments, and the exit from I-15 southbound onto US 95 northbound (indicated by a red line on the figure) would accommodate the dimensions of the heavy haul truck required to carry 125-ton rail casks. Thus, no infrastructure improvements are expected to be required here.

However, the entrance from southbound US 95 onto northbound I-15 (indicated by a yellow line on the figure) would present special problems for the return trips, due to the smaller turning radius as the route passes under I-15. Preliminary analysis by the Nevada Department of Transportation indicates that this segment would prevent return trips of trucks carrying empty casks by trucks such as those shown in Figure 5. Therefore, NDOT has concluded that construction of a northern portion of the planned bypass through northern North Las Vegas would have to be accelerated and expanded to include additional travel lanes in order to allow heavy haul travel on I-15. If the northern bypass is built and used for transportation of empty casks, it would likely be used for the west-bound, loaded trips as well. This could reduce the overall trip by about 30 minutes.

US 95 Northbound: Once heavy haul trucks have entered US 95 northbound, no serious operational problems are expected on the remaining route. The route includes limited access, four- or six-lane travel until the trucks reach the two-lane portion of the highway just west of Mercury. For the remainder of the route, according to NDOT, the highway has generally adequate sight distances* and sufficiently light traffic volume to allow some passing by following traffic without construction of passing lanes or turnouts, and the grade would generally permit

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* A possible exception is at Point of Rocks, between Mercury and NV 160, which might cause minor delays for a short distance.

travel at the maximum speed of 35-40 mph over most stretches. Only minor infrastructure improvements are expected to be required for this segment.

The Lathrop Wells Access Road: It is likely that the access road from US-95 to Area 25 would have to be improved to accommodate both the high volume of legal weight trucks, and the increasing number of heavy haul trucks. However, the responsibility for this construction would be the federal government's entirely, with NDOT approval of the intersection with US 95 as a public access highway.

Figure 1. Routes for Legal-Weight Truck Shipments of Nuclear Waste to NTS Area 25

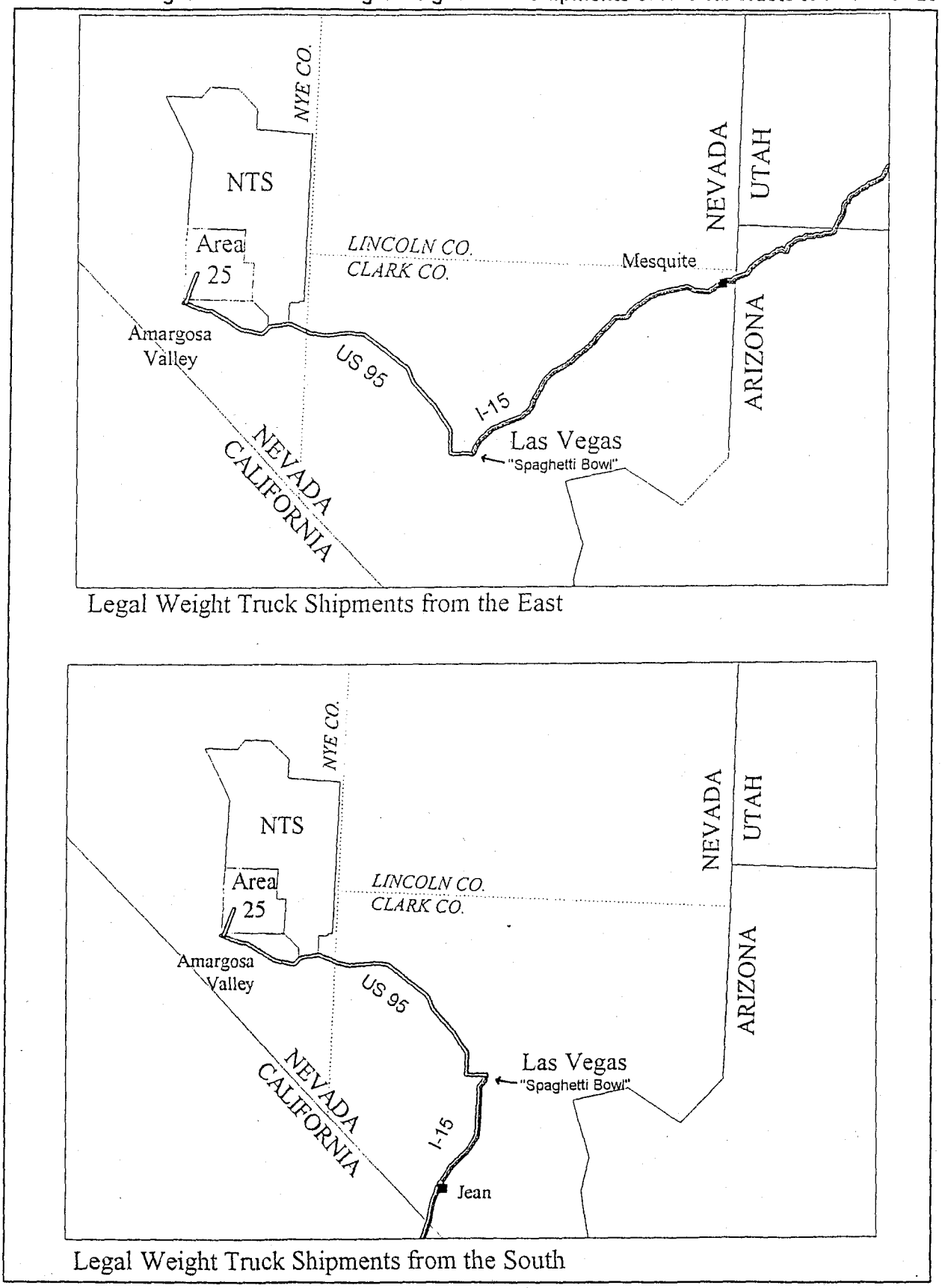
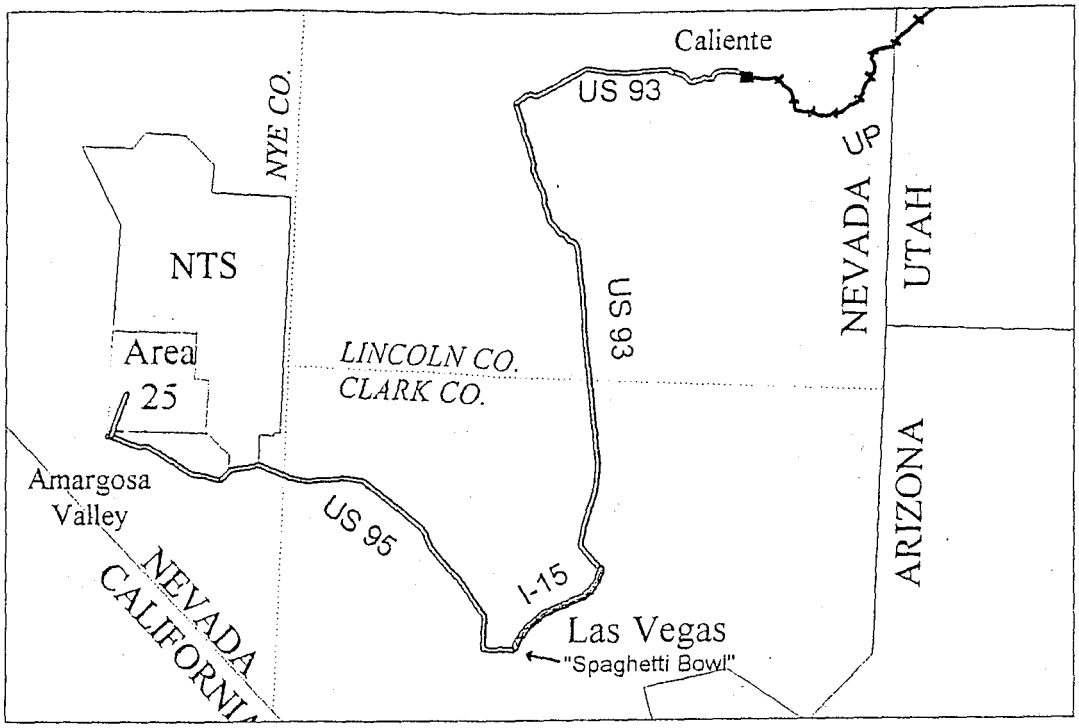
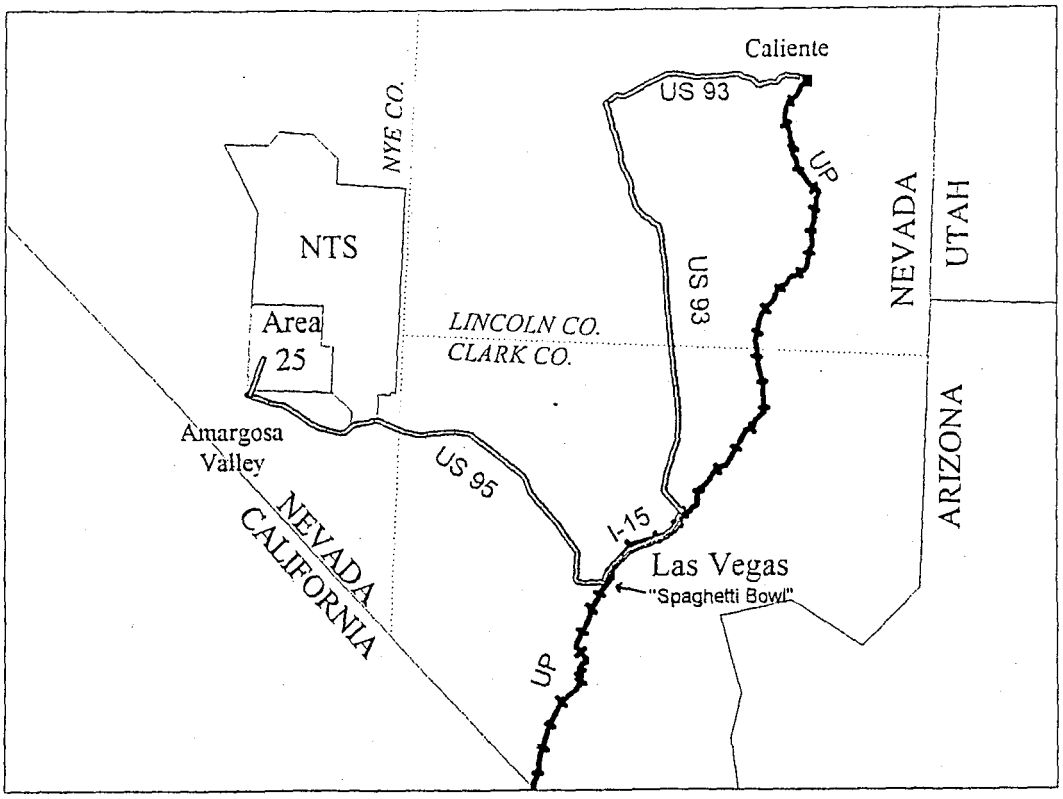


Figure 2. Routes for Rail and Heavy-Haul Truck Shipments of Nuclear Waste to NTS Area 25



Rail and Heavy Haul Shipments from the East



Rail and Heavy Haul Shipments from the South

Figure 3a. Possible Configuration of Heavy-Haul Truck (170-Foot Configuration

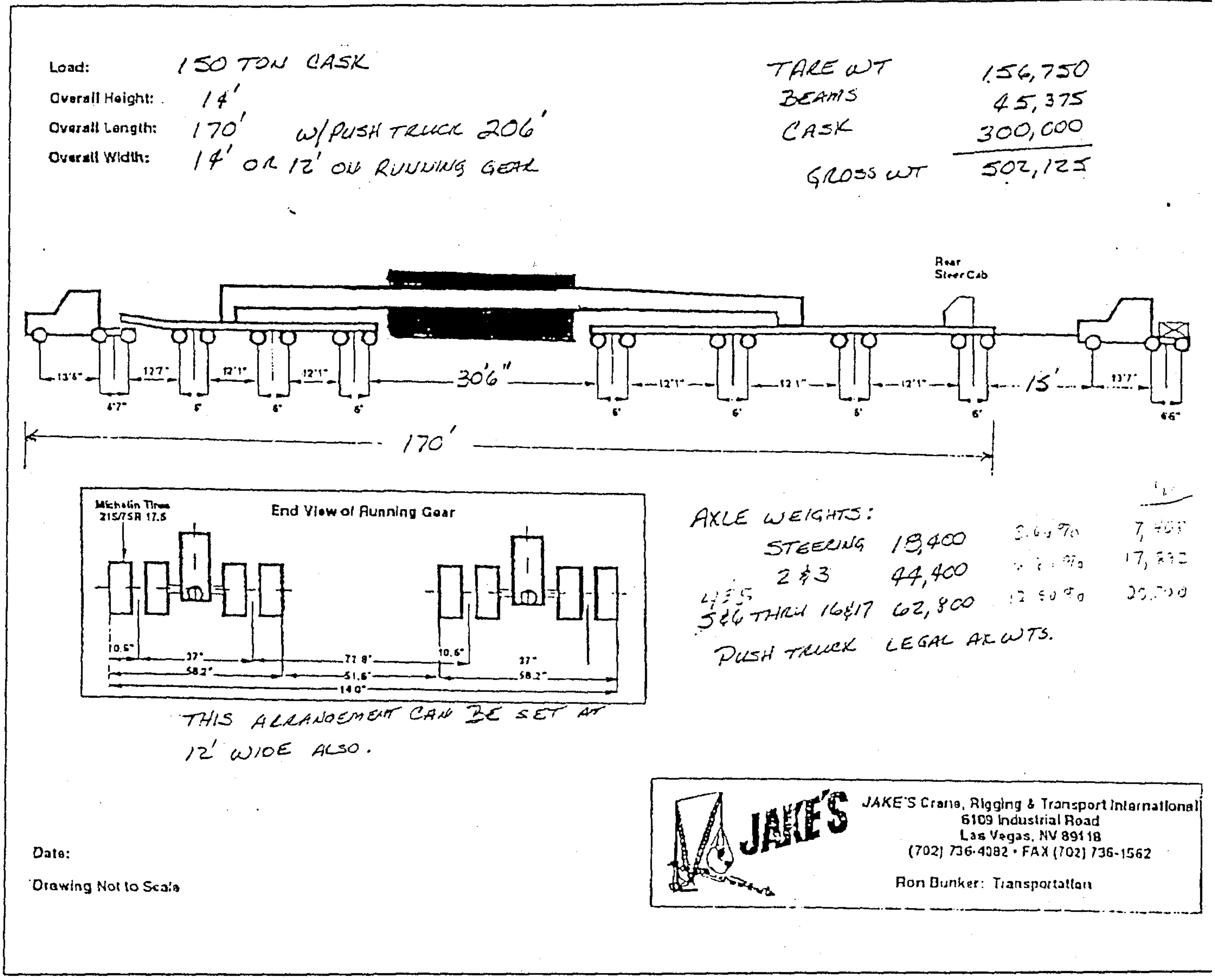


Figure 3b. Possible Configuration of Heavy-Haul Truck (206-Foot Configuration)

LOAD 150 TON CASK
HEIGHT 15'6"
O/A LENGTH 206' 242' W/ PUSH TRUCK
WIDTH 14' OR 12' ON RUNNING GEAR

TARE WT	195 390
BEAMS	64 395
CASK	300 000
GROSS WT	559,785

AXLE WTS:

STEERING	16,000
2 & 3	40,000
4 & 5 THRU 20 & 21	56,000

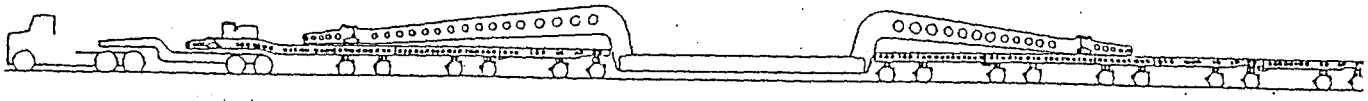


Figure 3c. Turning Radius of Heavy-Haul Truck (21-Axle Configuration)

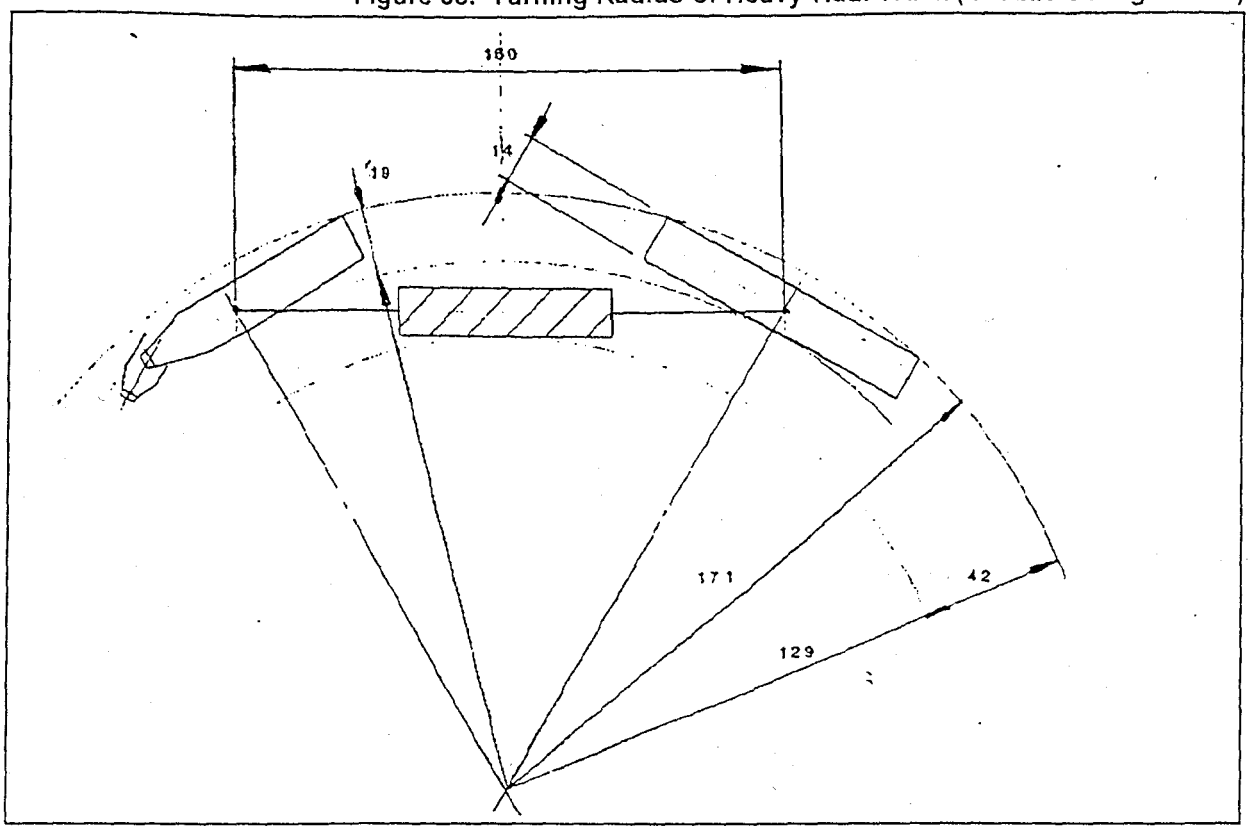


Figure 3d. Turning Radius of Heavy-Haul Truck (17-Axle Configuration)

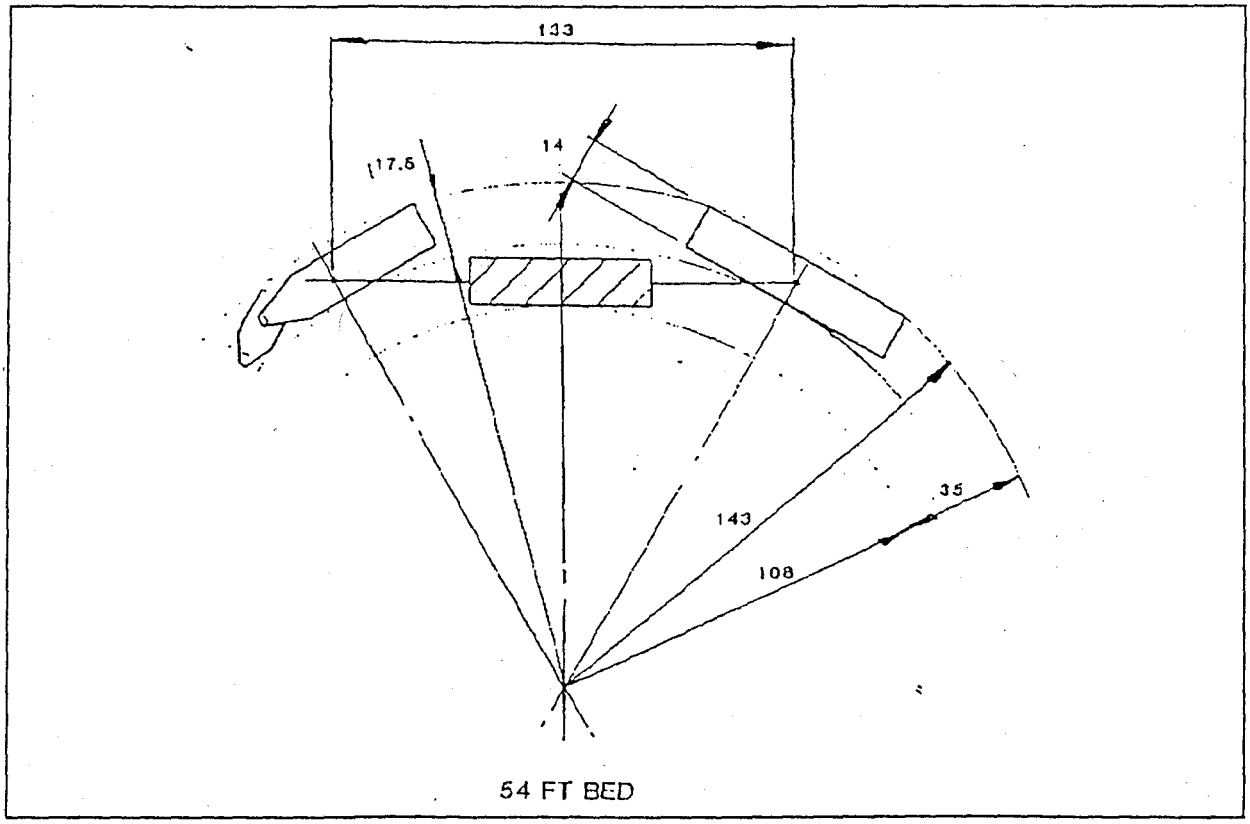


Figure 4. Frost Restrictions on Nevada Highways

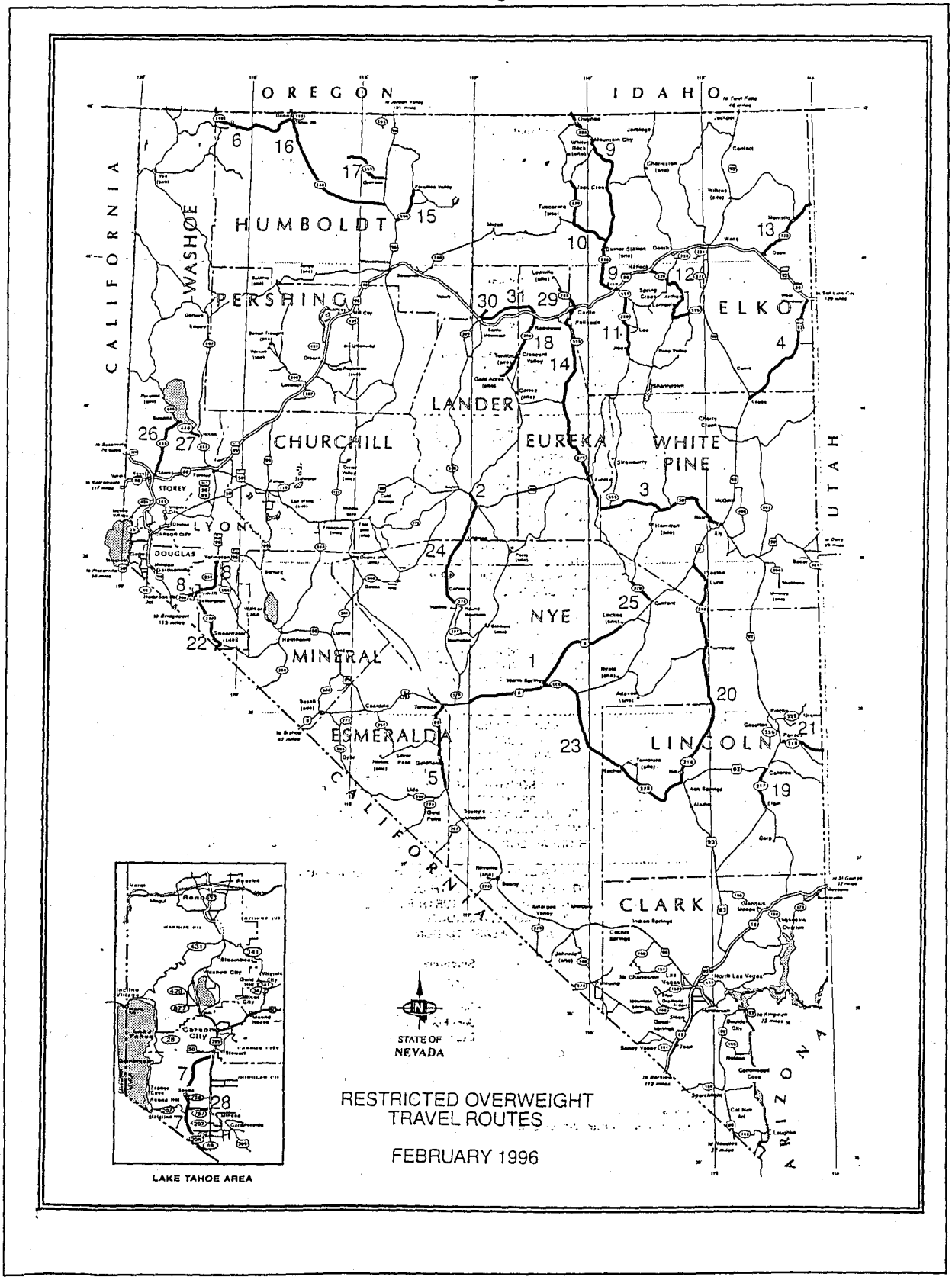


Figure 5. Caliente Intermodal Transfer Facility (Location Map)

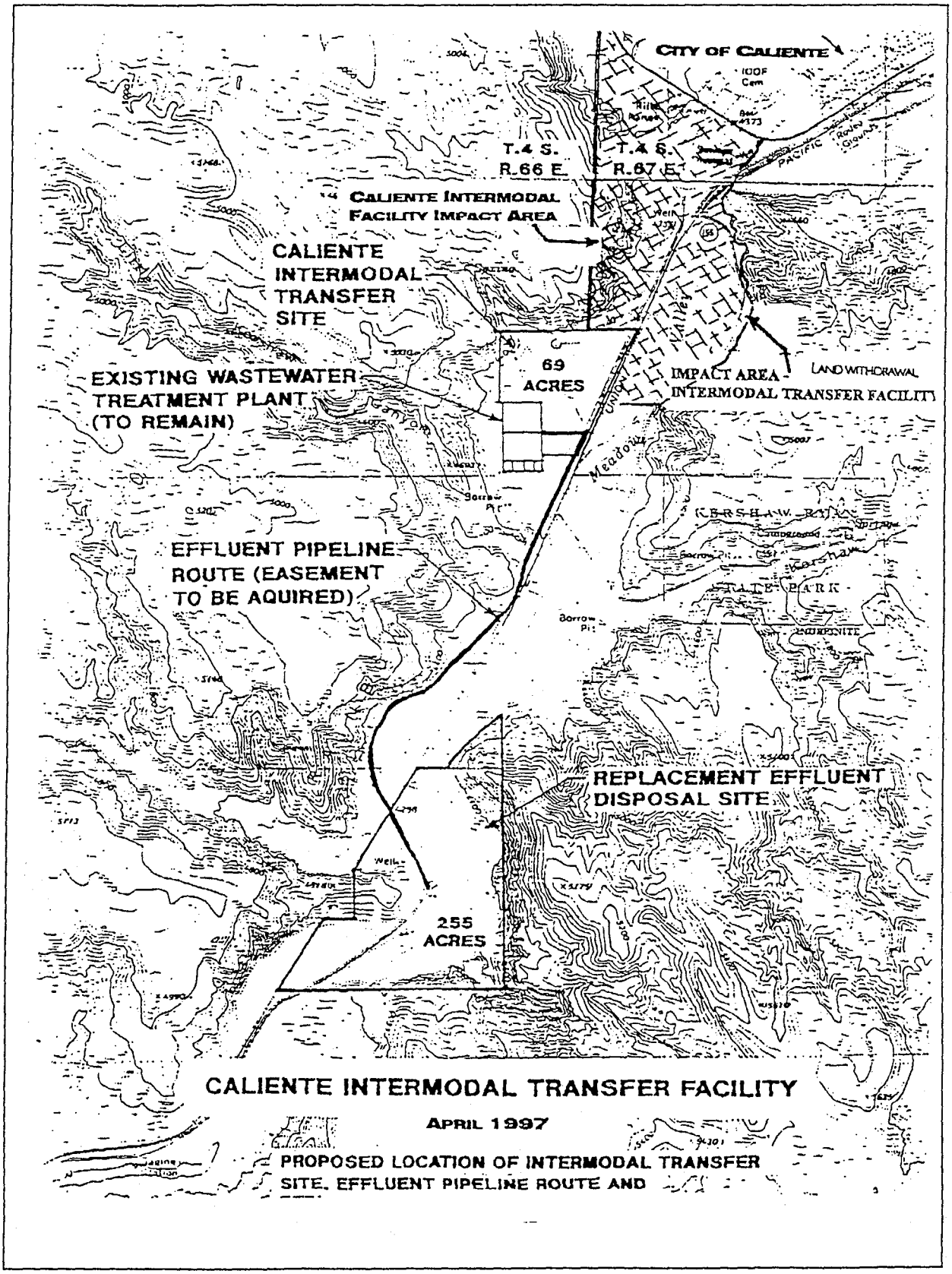


Figure 6. Caliente Intermodal Transfer Facility (Detail Map)

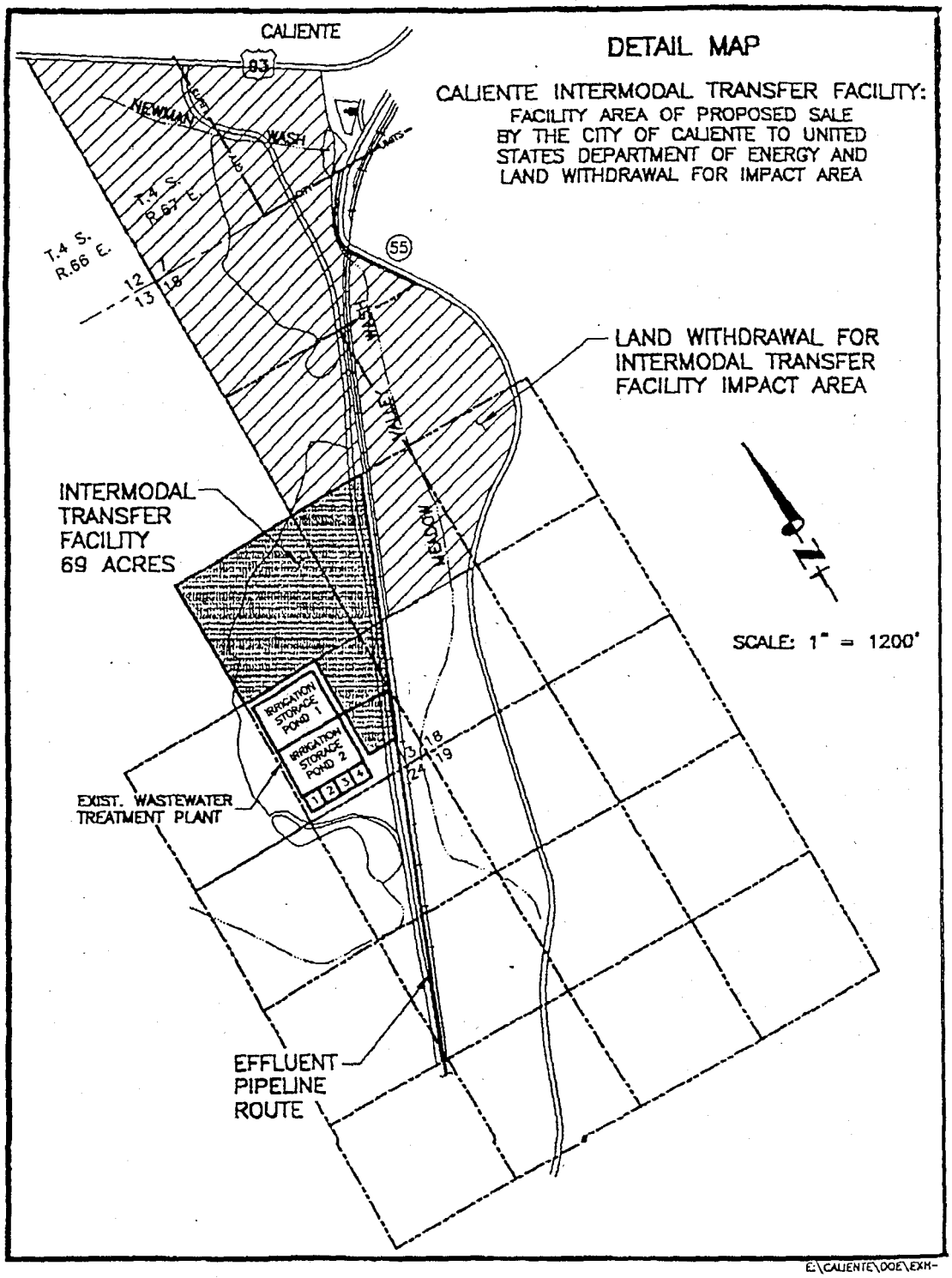
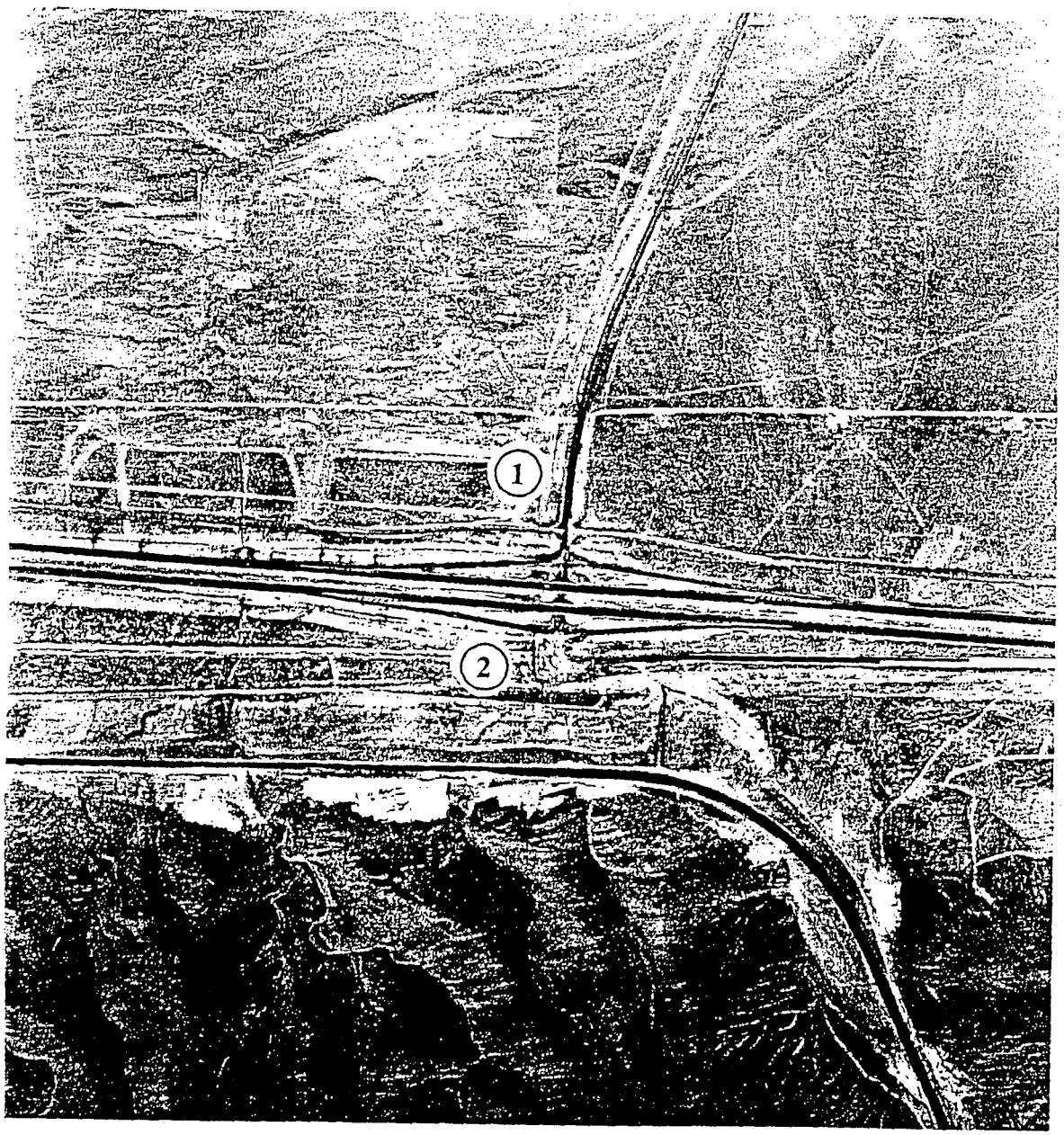


Figure 7. US 93 Interchange with I-15



FLOWN: 8-23-88

0 500 1000±

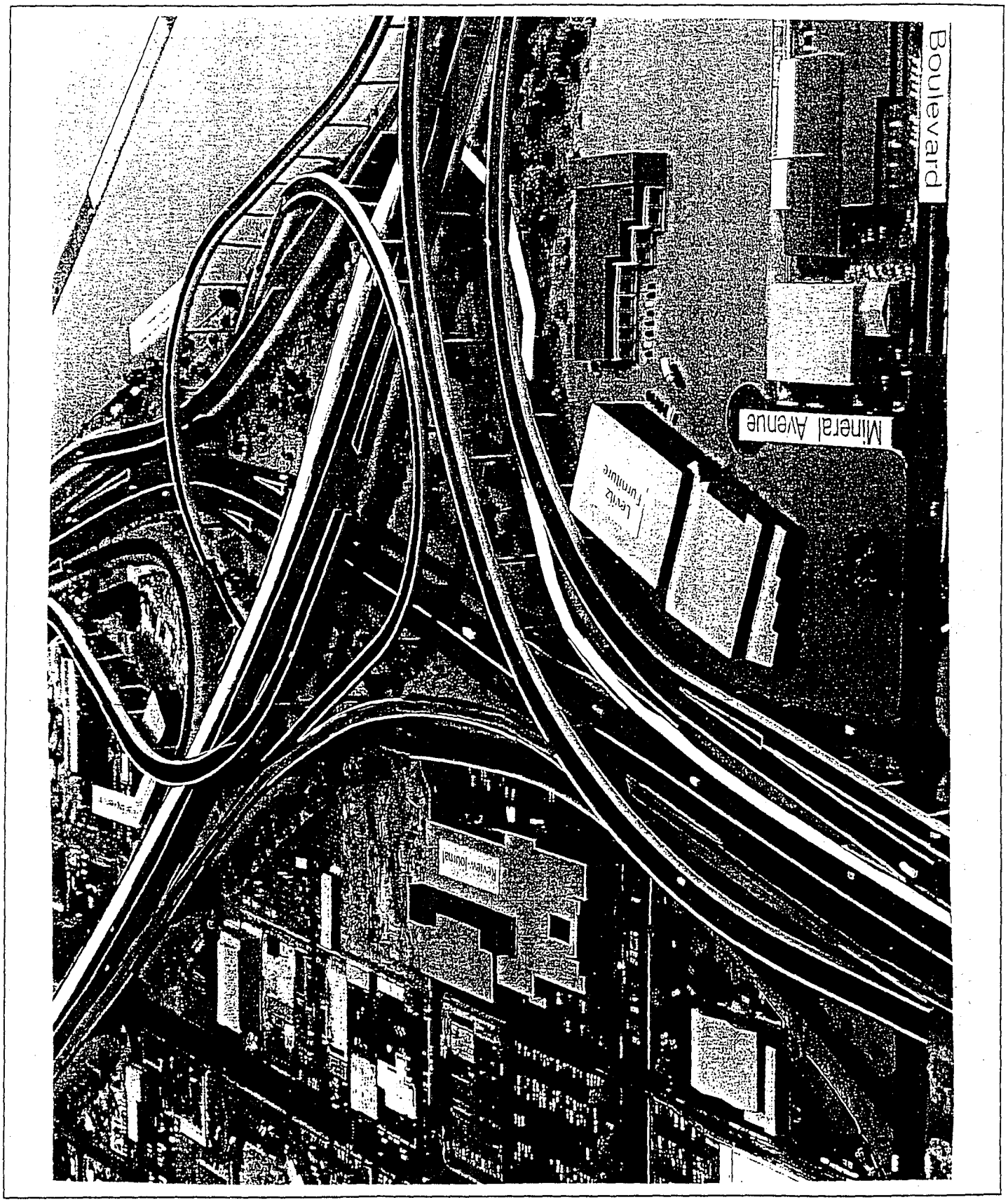
SCALE IN FEET

STRUCTURE TYPE: X220

US 93 Interchange
(Garnet)

I-15
I-64.32

Figure 8. Scale Model of "Spaghetti Bowl" Interchange (Under Construction)



4. STATE AGENCIES CONSIDERED IN THIS STUDY

The state agencies considered in this study are the Department of Transportation, the Nevada Highway Patrol, the Division of Emergency Management and the Public Service Commission. The Department of Health, which has radiological regulatory responsibilities, and the Division of Forestry, which has first responder and fire suppression responsibilities, are not included in this study, but may be included if possible at a later time. Training and certain equipment provided by state agencies to local first responders are included. Otherwise, however, the costs to local government agencies are not estimated in this study.

4.1 NEVADA DEPARTMENT OF TRANSPORTATION

NDOT Responsibilities for Nuclear Waste Transportation

The Nevada Department of Transportation (NDOT) supervises or conducts the planning, financing, construction, maintenance and analysis of major highway systems in the state. Among the Department's responsibilities that are most relevant to this analysis are the planning of transportation infrastructure and operations; the design, construction and maintenance of roadways; and the permitting of oversize and overweight vehicles. In this regard, the areas of immediate concern for NDOT if interim storage is pursued on a short time schedule are:

(1) *Ensuring the adequacy of the State's transportation infrastructure on routes likely to be used for nuclear waste transportation.* If nuclear waste is transported and stored in Nevada according to the provisions of S. 104, NDOT will be responsible for ensuring that the highway systems of the State are adequate for transporting nuclear waste in addition to the stream of existing and projected local and interstate commerce using these same systems.

(2) *The regulation of heavy haul shipments.* NDOT is responsible for regulating and imposing special operating requirements for oversized or overweight shipments on highways in the state.

(3) *Contingency planning for possible incidents requiring NDOT response.* Although the probability of incidents involving nuclear shipments is likely to be low, all state agencies that would be responsible in case of an incident must be prepared for any reasonable emergency scenario.

To prepare for the shipments associated with interim storage of nuclear waste in Nevada, the Nevada Department of Transportation would incur three major categories of costs: (1) costs associated with the increased level of responsibility for planning and maintaining safe transportation systems in the State; (2) costs associated with construction and maintenance of infrastructure improvements required as a result of interim storage shipments; and (3) costs associated with the construction of ports of entry.

Additional Staff for Planning and Contract Oversight

According to NDOT representatives, it is anticipated that shipments associated with an interim storage facility in Nevada would require the hiring of one additional staff member in the Planning/

Research Division, and one additional person to manage the contracts associated with infrastructure and other construction activities. The additional planning staff would be required to handle the increased level of activities associated with the acceleration of the transportation schedule, to assist the current planning staff in preparing policy recommendations to NDOT management (such as hazardous materials route designation or redesignation), and to assist with the increased public information responsibilities of the department. The additional contract management staff would be required to oversee the accelerated and expanded construction activities associated with ports of entry and infrastructure development.

The conclusion that the proposed interim storage development would require minimal additional NDOT staff is based on the assumption that only those additional responsibilities that are likely to be ongoing and continuous should be handled by permanent State staff, and that all other activities should be contracted to the private sector. The schedule for construction, and the specialized nature of the construction activities associated with infrastructure improvements and port of entry buildings, suggest that it would be inefficient to add state personnel to handle the construction management responsibilities required. Therefore, it is assumed that the State would execute a contract for the management of all construction work, including hiring and managing prime contractors and subcontractors, as well as the oversight of day-to-day construction activities. The State would retain the responsibility for approval of major construction activities and milestones, and for oversight of the construction management contract.

Highway Infrastructure Improvements

Several highway segments requiring infrastructure improvements would be built, rebuilt or widened by construction contractors managed by NDOT and its construction management contractor. Under an accelerated schedule of nuclear waste shipments, accelerated construction schedules would likely require premiums paid to contractors to ensure availability of labor and materials to complete construction projects before the first shipments are scheduled to begin. Also, as described above, it is probable that improvements of the magnitude and timing contemplated in this analysis would suggest the contracting of construction management to provide for accelerated construction.

In interviews conducted for this study, NDOT officials estimated infrastructure requirements associated with the accelerated schedule of shipments in S. 104. The major infrastructure requirements include:

- Accelerated development of a bypass to the Spaghetti Bowl interchange at I-15 and US 95 in Las Vegas. This improvement is required due to geometric considerations at the interchange that is currently under construction (see Figure 8). The costs associated with this construction were estimated by NDOT staff based on preliminary engineering studies of the area.

- Construction of climbing lanes on US 93 between Caliente and Crystal Springs. This improvement is required to avoid unnecessary interruptions in traffic on the major uphill climbs out of Caliente on this two-lane highway. The costs associated with this construction were estimated by NDOT staff based on preliminary engineering studies.

- Construction of turn-out areas at least every 25 miles on US 93 from Crystal Springs to the I-15 interchange. These are required to allow backed-up traffic to pass the slow-moving heavy haul trucks on this two-lane highway. The costs associated with this construction were estimated by NDOT staff based on preliminary engineering studies of the area.

- Construction of improvements for interchange at US 93 and I-15. This improvement is required to allow heavy haul trucks to negotiate the entrance onto I-15 southbound (for loaded shipments) and onto US 93 northbound (for return trips). The costs associated with this construction were estimated by NDOT staff based on preliminary engineering studies.

Infrastructure Improvements by Type

NDOT officials have estimated the costs of the above highway infrastructure improvements based on the type and extent of improvements within particular road segments. Summarized by type of improvement, the estimated costs are:

• Earthwork	$ 47 million
• Base and surface preparation	104 million
• Drainage	15 million
• Bridge widening	8 million
• Widening related to the northern bypass	57 million
• Traffic control	7 million
• Striping, lighting and signing	13 million
• Mobilization for accelerated implementation	18 million
• Contingencies and unknowns	72 million
• Engineering (15 percent)	51 million
Total	$ 392 million

Base and Surface Preparation Costs by Segment

Base and surface preparation costs were separately estimated for eight segments of the route from Caliente to Area 25 (see Figure 9). The costs for these eight segments are:

1.	US 93, Lincoln Co. milepost 90 to 80 (Caliente to Burnt Springs Range)	$44.27 million
2.	US 93, Lincoln Co. milepost 80 to 65 (to Pahroc Summit)	3.03 million
3.	US 93, Lincoln Co. milepost 65 to 54	4.12 million
4.	US 93, Lincoln Co. milepost 54 to 30	2.10 million
5.	US 93, Lincoln Co. milepost 30 to 18	9.10 million
6.	US 93, Lincoln Co. milepost 18 to Clark Co. milepost 52	5.45 million
7.	I-15 milepost 65 to US 95 milepost 42, Clark County	19.88 million
8.	US 95, Clark Co. milepost 42 to Nye Co. milepost 30	7.64 million
	Other base and surface preparation	8.41 million
	Total	$104 million

Construction of Ports of Entry

Ports of entry would be required to maintain continuous coverage of the entry of nuclear waste on legal-weight trucks at the two primary points at which nuclear waste would enter the State. While the Nevada Highway Patrol within the Department of Motor Vehicles and Public Safety would have primary responsibility for staffing, operating and maintaining the ports of entry, NDOT would be responsible for their construction. The State of Nevada has no experience with establishing and maintaining permanent ports of entry, so the cost of building and maintaining these facilities was estimated on the basis of recent

experience in California. (These cost estimates were provided by representatives of the Nevada Highway Patrol.)

The State of California has recently developed a plan for building a four-bay port of entry facility on I-15 near the Nevada border, to begin operations in the year 2001. Based on this information and actual and projected construction costs for three other sites, the construction costs for each port of entry in Nevada is estimated at $13.8 million, or a total of $27.6 million for two facilities at Nevada's eastern and southern highway ports of entry.

Considerations and Features at a Highway Port of Entry

Actual costs will depend on site location, with straight highway approaches and flat terrain to be preferred. According to representatives of the Nevada Highway Patrol, ports of entry require one-mile of acceleration and deceleration lanes, but with higher speed limits in Nevada, this requirement may be increased. Other considerations at ports of entry include:

- Signs, lighted at night, directing all trucks carrying nuclear waste to exit;
- Paved heavy-duty two-lane ramps leading into and out of weigh-in-motion scales;
- Computer-assisted weight scales to allow recording of individual axle weights and gross vehicle weight and vehicle classification while vehicle is in motion;
- Over-dimensional detectors;
- A building that includes office space, reception area, restrooms, showers, locker rooms, a specialized locker room for hazardous materials equipment such as self-contained protective suits, a break room, computer and electronic reader area;
- A signal system to direct traffic to inspection areas as necessary;
- An all-weather vehicle inspection facility with high-intensity lighting, automatic bay doors, fire suppression equipment, hazmat detection and monitoring equipment, and a generator;
- A containment area for high-level nuclear waste shipments which may be detained, including decontamination areas for staff;
- A paved and fenced vehicle parking and impoundment area; and
- Communications and data transfer equipment to provide links with NHP, hazmat teams, and other federal, state and local public safety agencies.

NDOT Cost Summary: Years 1 through 3

Total costs for Nevada Department of Transportation infrastructure construction and personnel for the first three years of the proposed shipment campaign is estimated at $420 million, of which 93.3 percent is for highway improvements and most of the remainder (6.6 percent) is for the construction of

two highway ports of entry. (Operating costs for the two ports of entry are described in the section on NHP costs.) The NDOT costs are summarized in Figure 10, and detailed in Appendix B.

Figure 9. NDOT Construction Areas

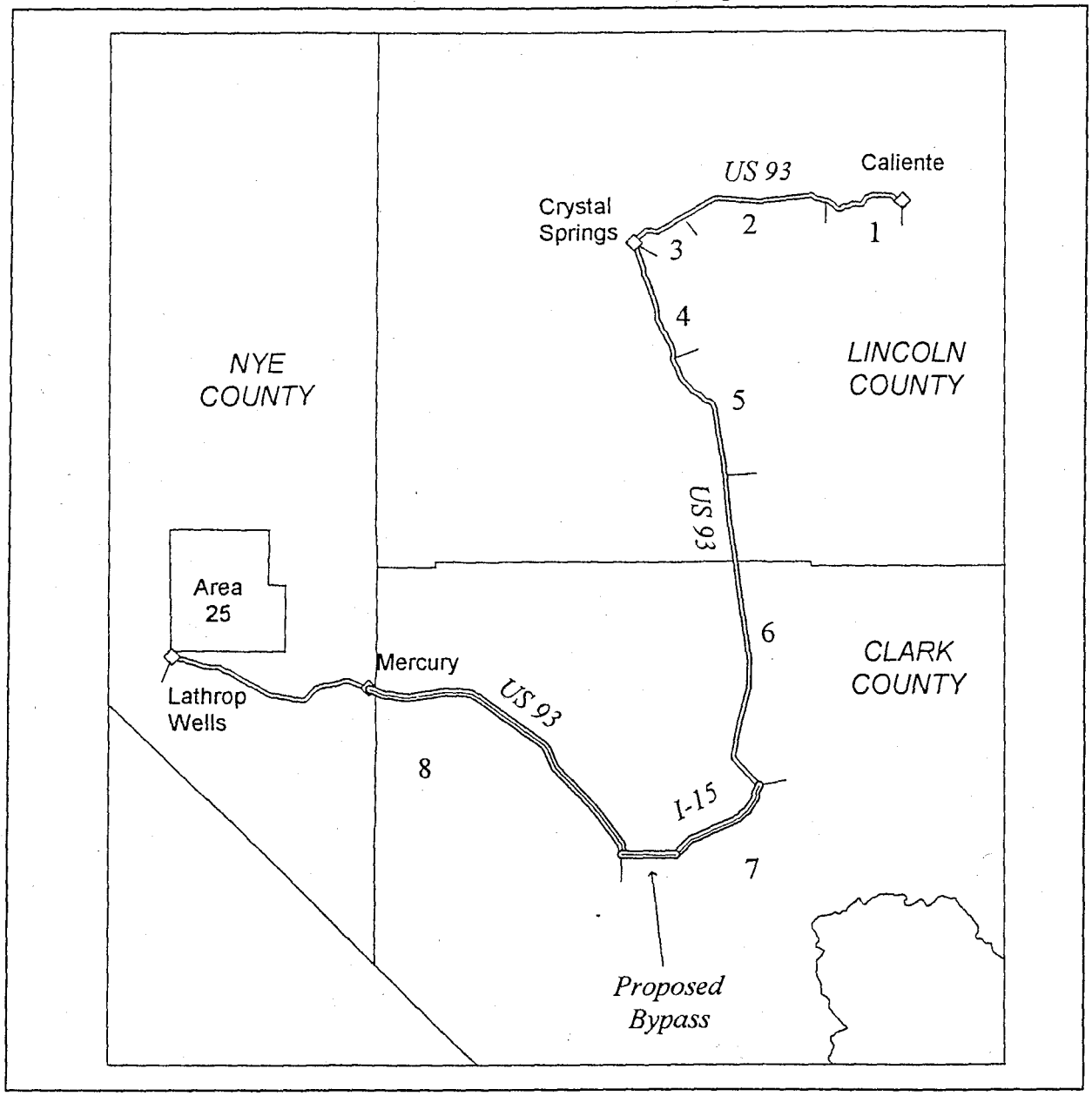


Figure 10. Costs for Nevada Department of Transportation

	Year 1	Year 2, 3	Years 1-3	Notes:
SUBTOTAL	$419,739,495	$134,995	$420,009,485	
Hwy Infrastructure	$392,000,000	$0	$392,000,000	Capital cost only; maintenance not included
Ports of Entry Const	$27,600,000	$0	$27,600,000	Capital cost for two hwy ports of entry
Personnel	$134,995	$134,995	$404,985	Addl staff positions supplement existing personnel
Equip for Addl Personnel	$4,500	$0	$4,500	No replacement costs thru year three

4.2 NEVADA HIGHWAY PATROL

The Nevada Highway Patrol (NHP) is a division of the Department of Motor Vehicles and Public Safety, responsible for policing public highways, enforcing Nevada's traffic laws and investigating highway accidents. Of specific relevance to this study is NHP's responsibility for enforcing laws related to the transportation of radioactive materials and other hazardous waste. Because of its extensive patrol responsibilities on federal and state highways, NHP is frequently the first responder to a traffic accident, and would likely be a first responder in cases of accidents involving nuclear waste or other hazardous materials.

The major areas of concern to NHP in the performance of its duties related to the transportation of nuclear waste to an interim storage facility in Nevada include: establishing and maintaining ports of entry; hiring, equipping and training personnel to staff the POEs; escorts for shipments in the state; emergency communications (a responsibility shared with NDOT), and emergency response to accidents involving nuclear waste shipments on state highways.

Escorting Truck Shipments

Escorts would be required to accompany truck shipments to the interim storage facility at Area 25—by legal-weight truck from the ports of entry, and by heavy haul truck from the intermodal transfer facility at Caliente. It is anticipated that sworn Nevada NHP officers will accompany each shipment. The escort of legal-weight truck shipments (estimated at about 7 shipments daily during year 1) would require a minimum of 16 troopers under ideal conditions, with one car leading and one following each shipment. Two officers would be held in reserve, for escorting shipments in excess of the daily average or for other backup requirements. The escort of heavy-haul truck shipments (estimated at about 1.2 per week during year 1) would also be required, but is not estimated in this report.

Managing Highway Ports of Entry

The construction of two highway ports of entry in Nevada would be managed by NDOT (see Section 4.1, above). The costs of operating and maintaining the ports of entry would be the responsibility of the NHP. Each station would be operated 24 hours per day and 365 days per year, requiring a

complement of 15 troopers (5 per shift), one sergeant and one lieutenant. In addition to the inspection duties at each station, officers will be required to accompany each shipment.

The Nevada Highway Patrol costs for manning two highway ports of entry and providing escort for base case truck and rail/heavy-haul shipments is estimated at $16.4 million over the first three years of the shipment campaign. Of this total, 65.4 percent is for personnel (base and overtime pay), 9.8 percent for equipment, and 10.3 percent for training of 274 existing and 34 additional NHP sworn officers. The costs are summarized in Figure 11, and detailed in Appendix B.

Figure 11. Costs for Nevada Highway Patrol: Ports of Entry and Escorts

	YEAR 1	YEAR 2,3	YEARS 1-3	Notes:
SUBTOTAL:	$7,700,012	$4,364,703	$16,429,418	
Personnel(1): Base Pay Troopers Sergeants Lieutenants Clerical Dispatchers	$2,480,949	$2,480,949	$7,442,846	34 sworn offices @ 2 POEs + 14 non-sworn
Personnel(2): Base Pay	$951,680	$951,680	$2,855,040	16 troopers: escort for LWT shipments
Personnel: Overtime Pay	$147,177	$147,177	$441,532	Salary @ 5%, benefits @ 2.5% base pay
Other Operating Costs	$815,629	$784,897	$2,385,424	
Vehicles(1)	$100,980	$100,980	$302,940	4 vehicles for addl sworn staff @ 2 POEs
Vehicles(2)	$432,000	$432,000	$1,296,000	16 vehicles for escort of LWT shipments
Utilities	$70,244	$60,000	$190,244	Supporting addl sworn & non-sworn personnel
Supplies	$93,659	$80,000	$253,659	Supporting addl sworn & non-sworn personnel
Maintenance	$46,829	$40,000	$126,829	Supporting addl sworn & non-sworn personnel
Contracts	$30,000	$30,000	$90,000	Supporting addl sworn personnel
Personnel Related	$41,917	$41,917	$125,752	Supporting addl sworn & non-sworn personnel
Equipment Costs	$1,608,654	$0	$1,608,654	No replacement costs thru year three
Vehicles	$714,000	$0	$714,000	For addl sworn personnel: POEs & escort
Rad Mon & Protctv Attire	$250,000	$0	$250,000	For addl sworn personnel: POEs
Computers	$81,659	$0	$81,659	For addl sworn & non-sworn personnel: POEs
Furniture	$117,073	$0	$117,073	For addl sworn & non-sworn personnel: POEs
Equip for Addl Personnel	$445,923	$0	$445,922	For addl sworn personnel: POEs
Training Costs	$1,695,922	$0	$1,695,922	No refresher trng thru year three
Awareness & Operations	$1,570,922	$0	$1,570,922	Not inclu in DEM trng
Specialized Training	$125,000	$0	$125,000	For sworn port of entry & escort staff

4.3 EMERGENCY COMMUNICATIONS: NDOT AND/OR NHP

The Responsibilities for Emergency Communications

The responsibility for emergency communications is shared among the Nevada Department of Transportation and the Nevada Highway Patrol, a division of the Nevada Department of Motor Vehicles and Public Safety. The two agencies have differing views about the best method for meeting the emergency communications needs associated with nuclear waste transportation. However, both agencies agree on the basic need for emergency communications, and the cost estimates for the two methods for meeting the needs are similar. The quantification of need in this report reflects the estimates of the Nevada Highway Patrol for the provision of emergency communications along shipment routes.

The Challenges of Emergency Communications for Nuclear Waste Shipments in Nevada

Communications associated with the transportation of nuclear waste in Nevada presents certain challenges. The nature of the materials being transported, and the perception of and actual risks associated with the materials, require close surveillance of the transporting vehicles and prompt response in case of accidents or incidents. The routes that would be used for waste transportation traverse both urban and rural areas, with a wide range of existing communications capabilities among public safety agencies. In rural areas, the routes' topography and widely separated towns present special problems of communications coverage.

Estimated Emergency Communications Costs

The Nevada Highway Patrol costs for providing emergency communications along the prospective highway and rail shipment routes is estimated at $28.3 million, of which 63.4 percent is for fixed communications equipment and microwave antennas, and 35.2 percent is for other equipment and its operations and maintenance. As mentioned above, the Nevada Department of Transportation and the Nevada Department of Motor Vehicles suggest different methods of meeting the communications needs associated with nuclear waste transportation. However, the agencies agree on the basic need, and their cost estimates for providing emergency communications along shipment routes are similar. The costs are summarized in Figure 12 and detailed in Appendix B.

Figure 12. Emergency Communications: NDOT and/or NHP

	Year 1	Year 2,3	Years 1-3	Notes:
SUBTOTAL:	$24,996,232	$1,651,266	$28,298,764	
Personnel: Base pay	$119,189	$119,189	$357,467	
Personnel: Overtime pay	$11,109	$11,109	$33,327	@9.32% base pay
Equipment Costs	424,865,934	$1,520,968	$27,907,870	
Vehicles	$76,000	$0	$76,000	4-wheel drive vehicles
Infrastructure	$17,947,066	$0	$17,947,066	Fixed equip 7 microwave antennas
Field User Equipment	$5,123,900	$0	$5,123,900	
Test Equip & Tools	$35,000	$0	$35,000	
Facilities Upgrade	$163,000	$0	$163,000	Re: NHP facilities in Carson City
Operations & Maint.	$1,520,968	$1,520,968	$4,562,904	@6.5 % equip purchase costs

4.4 NEVADA DIVISION OF EMERGENCY MANAGEMENT (DEM)

DEM Responsibilities for Nuclear Waste Transportation

The Nevada Division of Emergency Management is the State's coordinating agency for all emergency services, with responsibility for disaster preparedness, response, recovery and mitigation. The specific areas of DEM responsibility relevant to the preparedness for transportation of nuclear waste to an interim storage facility in Nevada would include:

- Routing—review of emergency plans, training and equipment needs for local governments. (This does not including the process of route designation, should designation of alternative routes be necessary or desired.)
- Driver/carrier compliance—recommendations to NHP and NDOT.
- Independent inspections—recommendations to NHP and NDOT.
- Bad weather/road conditions—modification of emergency plans and coordination with safe parking component.
- Safe parking—should Nevada law change to require safe parking, Nevada DEM would assist local and state emergency response agencies in the identification of appropriate locations for such facilities. (Construction of required safe parking areas would be by NDOT.)
- Advance notice/tracking—development of advance notice procedures and implementation of vehicle tracking system.
- Communications—coordination of state and local communications systems.
- Medical preparedness—identification of medical facility and training needs.
- Mutual aid agreements—development and maintenance of agreements among federal, state and local agencies.
- Emergency management/response—update of State Comprehensive Emergency Management Plan and development of comprehensive Radiological Transportation Plan.
- Equipment—acquisition, equipping and maintenance of mobile laboratory and hazardous materials vans, identification of local equipment needs.
- Training/exercises—coordination of training of state and local agency first responders, "train-the-trainer" coordination, and assistance in development and implementation of training exercises.
- Public information—provision of risk communications class and coordination of State public information programs.
- Program evaluation—coordination and management of evaluation efforts.

- Safe escorts—recommendations to NHP.
- Transportation infrastructure—recommendations to NDOT.
- Ports of entry—recommendations to NDOT and NHP.
- Terrorism—coordination of federal, state and local activity related to incidents and planning.
- Monitoring—coordination of State participation in DOE and EPA monitoring activities.

Estimated Costs of the Division of Emergency Management: Years 1-3

The costs associated with Division of Emergency Management responsibilities are estimated at $33.0 million over the first three years of the prospective shipment campaign. Of this total, 89.5 percent is for radiological detection equipment provided to relevant groups of potential accident responders along the routes, about 3.8 percent for training provided by DEM, and about 3.6 percent for base pay for 6 additional DEM positions. The costs include the purchase of 6 vans, of which three would be outfitted (with dosimeter readers, radiation monitors, gamma spectrometers) as modified radiological lab vans. Each would be manned by two persons on a 24-hour basis for accident response along the affected routes. Three vans intended for general purposes would not be so outfitted or manned. The costs are summarized in Figure 13 and detailed in Appendix B.

Figure 13. Costs for the Nevada Division of Emergency Management

	YEAR 1	YEAR 2,3	YEARS 1-3	Notes:
SUBTOTAL:	$30,706,990	$1,146,404	$32,999,798	
Personnel: Base Pay Management Analysts Radiological Specialist Communications Specialist Grants Project Analysts	$393,190	$393,190	$1,179,570	Incld 24 hr manning of 3 hazmat vans 3 positions @ levels I, II, and III
Radiol Detection Equip	$28,440,965	$543,000	$29,526,965	
Direct Reading Inst	$1,547,140	$0	$1,547,140	For first responders @ $140
Dosimeters/Battery Chargers	$1,110,880	$0	$1,110,880	For law enforce & fire responders @ $160
Ion Chamber Survey Meters	$10,935,225	$0	$10,935,225	For law enforce & fire responders @ $1575
Breathing Apparatus (SCBA)	$7,935,200	$0	$7,935,200	For law enforce responders @ $2800
Breathing Apparatus (SCBA)	$4,601,520	$0	$4,601,520	For emerg response vans: 20% fire @ $2,800
Encapsul Flash Suits	$1,768,000	$0	$1,768,000	For law enforce responders ex NHP @ $800
Radiation Equip Calibr	$543,000	$543,000	$1,629,000	Yearly calibration
Hazmat Team/Cntrl Oper Equip	$409,573	$16,252	$442,077	
Vehicles	$124,962	$0	$124,962	Vans for addl personnel (6)
Vehicle Regis, Modific	$46,692	$1,692	$50,076	Modif for 3 vans
Maintenance & Supplies	$13,600	$13,600	$40,800	

Figure 13. Costs for the Nevada Division of Emergency Management

	YEAR 1	YEAR 2,3	YEARS 1-3	Notes:
Elec Pocket Dosimeters	$59,400	$0	$59,400	For hazmat personnel @ $495
Dosimeter Readers	$12,000	$0	$12,000	For 3 vans @ $4000
Personal Radiation Monitors	$975	$0	$975	For 3 vans @ $325
Area Monitoring Equip	$4,014	$0	$4,014	
Gamma Spectrometers	$105,000	$0	$105,000	For 3 vans @ $35000
Cameras	$4,770	$0	$4,770	3 video, 3 digital
Computers	$33,000	$0	$33,000	Eleven computers
Decontamination Kits	$960	$960	$2,880	Three kits
Misc Equipment	$4,200	$0	$4,200	
Training	$1,269,300	$0	$1,269,300	No refresher trng thru year 3
1st Respndr Awareness,Oper	$535,450	$0	$535,450	For first responders ex NHP @ $25 + $25
Technician Classes	$663,000	$0	$663,000	For law enforce responders ex NHP @ $300
SCBA Training	$70,850	$0	$70,850	For law enforce responders @ $25
Space & Space Operations	$193,962	$193,962	$581,886	
Rent & Utilities	$50,000	$50,000	$150,000	
Telephone	$2,100	$2,100	$6,300	
Cellular Telephones	$7,700	$7,700	$23,100	
Office Supplies & Admin	$28,000	$28,000	$84,000	
Ins: office contents	$97,907	$97,907	$293,721	Re equipment & bldgs
Travel	$8,255	$8,255	$24,765	

4.5 NEVADA PUBLIC SERVICE COMMISSION (PSC)

The Nevada Public Service Commission (PSC) has been responsible for regulating public utilities in the State. In the 1997 General Assembly, PSC's responsibilities were reassigned to two agencies: the Public Utilities Commission (PUC) and the Public Transportation Commission.

A major concern to the PSC and its successors related to the transportation of nuclear waste to an interim storage facility in Nevada is the possible development and implementation of new permitting requirements for radioactive waste transporters. Additional permitting requirements for hazardous materials have been recommended by the Alliance for Uniform Hazmat Transportation Procedures to the U.S. Secretary of Transportation. If these requirements are implemented under Part III of the Alliance's Uniform Permit Application, additional responsibilities imposed on the PSC or its successors would result in additional work load to existing staff and additional costs of administration for the appropriate agency. Due to the uncertainty associated with the restructuring of the utility and transportation regulatory structure of the State, and the uncertainty associated with the implementation of additional permitting requirements, no costs have been estimated for this agency. However, given the need to provide inspections of rail shipments into the state, the costs associated with one rail inspector are included here. These costs, estimated at about $62,500 annually for salary and benefits, are detailed in Appendix B.

5. SUMMARY AND CONCLUSION

The accelerated schedule for transportation and interim storage of nuclear waste under proposed legislation would require Nevada agencies to prepare to protect the health, safety and commerce of the State from the effects of federally-mandated action. Discussions with agency officials and review of documents have supported this analysis of the costs of the State's preparation for nuclear waste transportation and interim storage.

5.1 COSTS TO NEVADA STATE AGENCIES: YEARS 1-3

The estimated costs for four Nevada state agencies are summarized in Figure 14, and detailed in Appendix B. The total for the first three years of the prospective shipment campaign is $498 million, a very large portion of which is for accelerated infrastructure improvements along affected highway routes, and provision of highway ports of entry on I-15 near the Arizona and California state lines. The annual costs in the second and third years of the shipment are $7.4 million (mostly involving the Nevada Highway Patrol). However, annual costs in subsequent years could be higher due to the need to maintain and replace equipment, and to provide refresher training.

Figure 14. The Cost to Four Nevada State Agencies

	Year 1	Year 2,3	Years 1-3
SUBTOTAL	$483,205,229	$7,359,868	$497,924,965
Dept. of Transportation	$419,739,495	$134,995	$420,009,485
Nevada Highway Patrol	$7,700,012	$4,364,703	$13,574,378
Emergency Communications	$24,996,232	$1,651,266	$28,298,764
Division of Emergency Mgt	$30,706,990	$1,146,404	$32,999,798
Public Service Commission	$62,500	$62,500	$187,500
Department of Health	NA	NA	NA
Dept. of Forestry	NA	NA	NA

5.2 THE IMPACTS OF A FEDERAL ACTION WITHOUT ASSURANCE OF MITIGATION

The cost estimates presented in Figure 14 may be considered high by "normal" impact assessment standards. In an analysis of fiscal impacts of a proposed action over which a jurisdiction has some control or influence, it is assumed that the entity proposing the action will accommodate the needs of the affected jurisdiction, and will avoid or mitigate adverse impacts. In the case of proposed legislation (S-104 or HR 1270) for accelerated shipment to an interim storage in Nevada, the proposed action would occur over the clearly expressed opposition of the affected jurisdiction, and the proponent has not made commitments to measures which might avoid or mitigate adverse impacts. Indeed, many provisions in the proposed legislation indicate the apparent willingness of Congress to ignore or supersede the interests of the State of Nevada in favor of the interests of expediting the shipment of nuclear waste. An example

is the provision of S-104 Section 501 that state, local and Tribal ordinances may be preempted if they are found to be an obstacle to the purposes of the Act.

To protect the State of Nevada's interests, including the protection of the health, safety and welfare of its citizens, and to avoid undue disruptions to the local and interstate commerce on its highways, the actions described in this report appear reasonable. Some of the actions may be expected to occur in the future without the expedited shipment of nuclear wastes, but because they are not currently under development, it is reasonable to attribute them to the needs associated with the federally-mandated actions represented by S. 104 and H.R. 1270.

5.3 COSTS MAY OCCUR AS SHORTFALLS OR DEFICIENCIES

The estimates of needs of State agencies, as described in this report, are quantifications of the difference between where the State of Nevada is today and where it should be at the time of the first shipments. However, no attempt has been made to predict specifically which of the needs described here will actually be implemented, and which may not be implemented due to cost or time constraints. Also, no attempt is made to determine who will pay for each of the staff, equipment or capital needs described here. Although State agency personnel have identified these items as necessary to protect the public, it is unlikely that the State can pay for all these needs, or that all hiring, construction and acquisition can be completed in time to prepare for the accelerated shipment schedule being mandated by the Congress. Those items of public health, safety and welfare need that are not implemented at the time of the first shipments will remain as shortfalls or deficiencies in public requirements, quantified in dollars. In fact, although expressed in monetary terms, those unmet needs would result in the assumption of additional risk or other burdens of the national nuclear waste program by the people of the State of Nevada.

APPENDIX A: SOURCES

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Planning Information Corporation, *The Transportation of Spent Nuclear Fuel and High-Level Waste: A Systematic Basis for Planning and Management at National, Regional and Community*, September 1996.

APPENDIX B: NEVADA AGENCY COST ESTIMATE DETAILS

The following tables present additional detail for agency costs in the first year and the second or third years of the proposed shipment campaign. Three-year totals are included in each case. Units refer to the numbers of new staff positions, the number of vehicles or other equipment purchased, or the number of persons expected to receive various types of training. The figures presented in the tables drawn on a file of materials assembled by each agency participating in this study.

Effects of Proposed Legislation on Nevada State Agencies:

Effects of Proposed Legislation on Nevada State Agencies:

Table 1-1. Nevada Department of Transportation

	YEAR 1	Salary	Benefits	# Units	YEARS 1-3	Notes:
SUBTOTAL:	$419,739,495	$97,680	$37,315		$420,009,485	
Hwy Infrastructure	$392,000,000				$392,000,000	Capital cost only; maintenance not included
Ports of Entry Const	$27,600,000				$27,600,000	Capital cost for two hwy ports of entry
Personnel	$134,995	$97,680	$37,315	2		Addl staff positions supplement ex personnel
Equip for Addl Personnel	$4,500				$4,500	No replacement costs thru year three

Table 1-2. Nevada Department of Transportation

	YEARS 2,3	Salary	Benefits	# Units	YEARS 1-3	Notes:
SUBTOTAL:	$134,995	$97,680	$37,315		$420,009,485	
Hwy Infrastructure	$0				$392,000,000	Capital cost only; maintenance not included
Ports of Entry Const	$0				$27,600,000	Capital cost for two hwy ports of entry
Personnel	$134,995	$97,680	$37,315	2	$404,985	Addl staff positions supplement ex personnel
Equip for Addl Personnel	$0				$4,500	No replacement costs thru year three

Effects of Proposed Legislation on Nevada State Agencies:
Table 2-1. Nevada Highway Patrol: Ports of Entry & Escorts

	YEAR 1	Salary	Benefits	# Units	YEARS 1-3	Notes:
SUBTOTAL:	$7,700,012	$2,577,191	$1,002,615		$16,429,418	
Personnel(1): Base Pay	$2,480,949	$1,778,836	$702,113	48	$7,442,846	34 sworn offices @ 2 POEs + 14 non-sworn
Troopers		$1,266,810		30		
Sergeants		$92,384		2		
Lieutenants		$105,284		2		
Clerical		$259,380		12		
Dispatchers		$54,978		2		
Personnel(2): Base Pay	$951,680	$675,632	$276,048	16	$2,855,040	16 troopers: escort for LWT shipments
Personnel: Overtime Pay	$147,177	$122,723	$24,454		$441,532	Salary @ 5%, benefits @ 2.5% base pay
Other Operating Costs	$815,629				$2,385,424	
Vehicles(1)	$100,980			4	$302,940	4 vehicles for addl sworn staff @ 2 POEs
Vehicles(2)	$432,000			16	$1,296,000	16 vehicles for escort of LWT shipments
Utilities	$70,244				$190,244	Supporting addl sworn & non-sworn personnel
Supplies	$93,659				$253,659	Supporting addl sworn & non-sworn personnel
Maintenance	$46,829				$126,829	Supporting addl sworn & non-sworn personnel
Contracts	$30,000				$90,000	Supporting addl sworn personnel
Personnel Related	$41,917				$125,752	Supporting addl sworn & non-sworn personnel
Equipment Costs	$1,608,654				$1,608,654	No replacement costs thru year three
Vehicles	$714,000			50	$714,000	For addl sworn personnel: POEs & escort
Rad Mon & Protctv Attire	$250,000			34	$250,000	For addl sworn personnel: POEs
Computers	$81,659			48	$81,659	For addl sworn & non-sworn personnel: POEs
Furniture	$117,073			48	$117,073	For addl sworn & non-sworn personnel: POEs
Equip for Addl Personnel	$445,922			34	$445,922	For addl sworn personnel: POEs
Training Costs	$1,695,922				$1,695,922	No refresher trng thru year three
Awareness & Operations	$1,570,922			308	$1,570,922	Not inclu in DEM trng
Specialized Training	$125,000			50	$125,000	For sworn port of entry & escort staff

Effects of Proposed Legislation on Nevada State Agency Costs:
Table 2-2. Nevada Highway Patrol: Ports of Entry & Escorts

	YEARS 2,3	Salary	Benefits	# Units	YEARS 1-3	Notes:
SUBTOTAL:	$4,364,703	$2,577,191	$1,002,615		$16,429,418	
Personnel(1): Base Pay	$2,480,949	$1,778,836	$702,113	48	$7,442,846	34 sworn offices @ 2 POEs + 14 non-sworn
Troopers		$1,266,810		30		
Sergeants		$92,384		2		
Lieutenants		$105,284		2		
Clerical		$259,380		12		
Dispatchers		$54,978		2		
Personnel(2): Base Pay	$951,680	$675,632	$276,048	16	$2,855,040	16 troopers: escort for LWT shipments
Personnel: Overtime Pay	$147,177	$122,723	$24,454		$441,532	Salary @ 5%, benefits @ 2.5% base pay
Other Operating Costs	$784,897				$2,385,424	
Vehicles(1)	$100,980			4	$302,940	4 vehicles for addl sworn staff @ 2 POEs
Vehicles(2)	$432,000			16	$1,296,000	16 vehicles for escort of LWT shipments
Utilities	$60,000				$190,244	Supporting addl sworn & non-sworn personnel
Supplies	$80,000				$253,659	Supporting addl sworn & non-sworn personnel
Maintenance	$40,000				$126,829	Supporting addl sworn & non-sworn personnel
Contracts	$30,000				$90,000	Supporting addl sworn personnel
Personnel Related	$41,917				$125,752	Supporting addl sworn & non-sworn personnel
Equipment Costs	$0				$1,608,654	No replacement costs thru year three
Vehicles	$0			0	$714,000	For addl sworn personnel: POEs & escort
Rad Mon & Protctv Attire	$0			0	$250,000	For addl sworn personnel: POEs
Computers	$0			0	$81,659	For addl sworn & non-sworn personnel: POEs
Furniture	$0			0	$117,073	For addl sworn & non-sworn personnel: POEs
Equip for Addl Personnel	$0			0	$445,922	For addl sworn personnel: POEs
Training Costs	$0				$1,695,922	No refresher trng thru year three
Awareness & Operations	$0			0	$1,570,922	Not inclu in DEM trng
Specialized Training	$0			0	$125,000	For sworn port of entry & escort staff

Effects of Proposed Legislation on Nevada State Agencies:

Table 3-1. Emergency Communications: Nevada Department of Transportation and/or Nevada Highway Patrol

	YEAR 1	Salary	Benefits	# Units	YEARS 1-3	Notes:
SUBTOTAL:	$24,996,232	$106,186	$24,112		$28,298,764	
Personnel: Base Pay	$119,189	$96,151	$23,038	2	$357,567	
Personnel: Overtime Pay	$11,109	$10,035	$1,074		$33,327	Overtime @ 9.3% base pay
Equipment Costs	$24,865,934				$27,907,870	
Vehicles	$76,000			2	$76,000	4-wheel drive vehicles
Infrasructure	$17,947,066				$17,947,066	Fixed equip & microwave antennas
Field user equipment	$5,123,900				$5,123,900	
Test Equip & Tools	$35,000				$35,000	
Facilities Upgrade	$163,000				$163,000	Re NHP facilities in Carson City
Operations & Maintenance	$1,520,968				$4,562,904	@ 6.5% equip purchase cost

Table 3-2. Emergency Communications: Nevada Department of Transportation and/or Nevada Highway Patrol

	YEARS 2,3	Salary	Benefits	# Units	YEARS 1-3	Notes:
SUBTOTAL:	$1,651,266	$106,186	$24,112		$28,298,764	
Personnel: Base Pay	$119,189	$96,151	$23,038	2	$357,567	
Personnel: Overtime Pay	$11,109	$10,035	$1,074		$33,327	Overtime @ 9.3% base pay
Equipment Costs	$1,520,968				$27,907,870	
Vehicles	$0			2	$76,000	4-wheel drive vehicles
Infrasructure	$0				$17,947,066	Fixed equip & microwave antennas
Field user equipment	$0				$5,123,900	
Test Equip & Tools	$0				$35,000	
Facilities Upgrade	$0				$163,000	Re NHP facilities in Carson City
Operations & Maintenance	$1,520,968				$4,562,904	@ 6.5% equip purchase cost

Effects of Proposed Legislation on Nevada State Agencies:

Table 5-1. Summary for Four State Agencies

	YEAR 1	Salary	Benefits	# Units	YEARS 1-3
SUBTOTAL	$483,205,229	$3,111,682	$1,189,107		$497,924,965
DEPT OF TRANSPORTATION	$419,739,495	$97,680	$37,315		$420,009,485
NEVADA HIGHWAY PATROL	$7,700,012	$2,577,191	$1,002,615		$16,429,418
EMERG COMMUNIC: NDOT/NHP	$24,996,232	$106,186	$24,112		$28,298,764
DIVISION OF EMERGENCY MGT	$30,706,990	$285,400	$107,790		$32,999,798
PUBLIC SERVICE COMMISSION	$62,500	$45,224	$17,276		$187,500
DEPT OF HEALTH	NA	NA			NA
DEPT OF FORESTRY	NA	NA			NA

Table 5-2. Summary for Four State Agencies

	YEARS 2,3	Salary	Benefits	# Units	YEARS 1-3
SUBTOTAL	$7,359,868	$3,111,682	$1,189,107		$497,924,965
DEPT OF TRANSPORTATION	$134,995	$97,680	$37,315		$420,009,485
NEVADA HIGHWAY PATROL	$4,364,703	$2,577,191	$1,002,615		$16,424,418
EMERG COMMUNIC: NDOT/NHP	$1,651,266	$106,186	$24,112		$28,298,764
DIVISION OF EMERGENCY MGT	$1,146,404	$285,400	$107,790		$32,999,798
PUBLIC SERVICE COMMISSION	$62,500	$45,224	$17,276		$187,500
DEPT OF HEALTH	NA				NA
DEPT OF FORESTRY	NA				NA

Effects of Proposed Legislation on Nevada State Agency Costs (Cont)

Table 4-1. Nevada Division of Emergency Management

	Year 1	Salary	Benefits	# Units	Years 1-3	Notes:
SUBTOTAL:	$30,706,990	$285,400	$107,790		$32,999,798	
Personnel: Base Pay	$393,190	$285,400	$107,790	6	$1,179,570	Includes 24 hr manning of 3 hazmat vans
Management Analysts		NA		3		3 positions @ levels I, II & III
Radiological Specialist		NA		1		
Communications Specialist		NA		1		
Grants Project Analyst		NA		1		
Radiol Detection Equip	$28,440,965				$29,526,965	
Direct Reading Inst	$1,547,140			11051	$1,547,140	For first responders @ $140
Dosimeters/Battery Chargers	$1,110,880			6943	$1,110,880	For law enforce & fire responders @ $160
Ion Chamber Survey Meters	$10,935,225			6943	$10,935,225	For law enforce & fire responders @ $1575
Breathing Apparatus (SCBA)	$7,935,200			2834	$7,935,200	For law enforce responders @ $2800
Breathing Apparatus (SCBA)	$4,601,520			2834	$4,601,520	For emerg response vans: 20% fire @ $2800
Encapsul Flash Suits	$1,768,000			2210	$1,768,000	For law enforce responders ex NHP @ $800
Radiation Equip Calibr	$543,000				$1,629,000	@ $30/instr; 1st & 3rd yrs
Hazmat Team/Cntrl Oper Equip	$409,573				$442,077	Yearly calibration
Vehicles	$124,962			6	$124,962	Vans for addl personnel (6)
Vehicle Regis, Modific, Ins	$46,692			6	$50,076	Modif for 3 vans
Maintenance & Supplies	$13,600				$40,800	Maint, tires, gas: 6 vans
Elec Pocket Dosimeters	$59,400			120	$59,400	For hazmat personnel @ $495
Dosimeter Readers	$12,000			3	$12,000	For 3 vans @ $4000
Personal Radiation Monitors	$975			3	$975	For 3 vans @ $325
Area Monitoring Equip	$4,014				$4,014	
Gamma Spectrometers	$105,000				$105,000	For 3 vans @ $35000
Cameras	$4,770				$4,770	For 3 video, 3 digital
Computers	$33,000				$33,000	Eleven computers
Decontamination Kits	$960				$2,880	Three kits
Misc Equipment	$4,200				$4,200	
Training	$1,269,300				$1,269,300	No refresher trng thru year 3
1st Respndr Awareness,Oper	$535,450				$535,450	For first responders ex NHP @ $25 + $25
Technician Classes	$663,000				$663,000	For law enforce responders ex NHP @ $300
SCBA Training	$70,850				$70,850	For law enforce responders @ $25
Space & Space Operations	$193,962				$581,886	
Rent & Utilities	$50,000				$150,000	
Telephone	$2,100				$6,300	
Cellular Telephones	$7,700				$23,100	
Office Supplies & Admin	$28,000				$84,000	
Ins: office contents	$97,907				$293,721	Re equipment & bldgs
Travel	$8,255				$24,765	

Effects of Proposed Legislation on Nevada State Agency Costs (Cont)

Table 4-2. Nevada Division of Emergency Management

	Years 2,3	Salary	Benefits	# Units	Years 1-3	Notes:
SUBTOTAL:	$1,146,404	$285,400	$107,790		$32,999,798	
Personnel: Base Pay	$393,190	$285,400	$107,790	6	$1,179,570	Includes 24 hr manning of 3 hazmat vans
Management Analysts		NA		3		3 positions @ levels I, II & III
Radiological Specialist		NA		1		For first responders @ $140
Communications Specialist		NA		1		For law enforce & fire responders @ $160
Grants Project Analyst		NA		1		For law enforce & fire responders @ $1575
Radiol Detection Equip	$543,000					For law enforce responders @ $2800
Direct Reading Inst	$0			11051	$29,526,965	For emerg response vans: 20% fire @ $2800
Dosimeters/Battery Chargers	$0			6943	$1,547,140	For law enforce responders ex NHP @ $800
Ion Chamber Survey Meters	$0			6943	$1,110,880	@ $30/instr; 1st & 3rd yrs
Breathing Apparatus (SCBA)	$0			2834	$10,935,225	Yearly calibration
Breathing Apparatus (SCBA)	$0			2834	$7,935,200	Vans for addl personnel (6)
Encapsul Flash Suits	$0			2210	$4,601,520	Modif for 3 vans
Radiation Equip Calibr	$543,000				$1,768,000	Maint, tires, gas: 6 vans
Hazmat Team/Cntrl Oper Equip	$16,252				$1,629,000	For hazmat personnel @ $495
Vehicles	$0				$442,077	For 3 vans @ $4000
Vehicle Regis, Modific, Ins	$1,692			6	$124,962	For 3 vans @ $325
Maintenance & Supplies	$13,600			6	$50,076	For 3 vans @ $35000
Elec Pocket Dosimeters	$0				$40,800	For 3 video, 3 digital
Dosimeter Readers	$0				$59,400	Eleven computers
Personal Radiation Monitors	$0			120	$12,000	Three kits
Area Monitoring Equip	$0			3	$975	No refresher trng thru year 3
Gamma Spectrometers	$0			3	$4,014	For first responders ex NHP @ $25 + $25
Cameras	$0				$105,000	For law enforce responders ex NHP @ $300
Computers	$0				$4,770	For law enforce responders @ $25
Decontamination Kits	$960				$33,000	Re equipment & bldgs
Misc Equipment	$0				$2,880	
Training	$0				$4,200	
1st Respndr Awareness,Oper	$0				$1,269,300	
Technician Classes	$0				$535,450	
SCBA Training	$0				$663,000	
Space & Space Operations	$193,962				$70,850	
Rent & Utilities	$50,000				$581,886	
Telephone	$2,100				$150,000	
Cellular Telephones	$7,700				$6,300	
Office Supplies & Admin	$28,000				$23,100	
Ins: office contents	$97,907				$84,000	
Travel	$8,255				$293,721	
					$24,765	